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Computer Weekly

Thursday, January 21, 1982

Rendeck

Systime ups US licence sales

By Philip Hunter

FOLLOWING up an announcement of record profits last week minicomputer manufscturer Systime has broken into the US market with n distributor to sell licences for its Systel teleprocessing monitor.

The deal closely follows one with Philip Morris Tobacco which involved the sale of 29 run-time licences and two full licences for a total $400,000. The new deal, with American Computer Group Inc of Boston, is expected over the next 15 months to lead to the sale of 12 licences costing about $28,000 each.

"We can't support all our products any more," explains a company spokeswoman.

Systime of Leeds puts its recent £2.2 million profits on £32.1 million turnover down to strong performance at the large and small ends of its range, with the middle range 5000 series being less successful.

"The large side, based on the 8000 series went especially well," the spokeswoman said. She is also pleased with the start made by the small business computer, the System 500, which was launched six months ago for under £10,000.

Production of Systime's new four-terminal viewdata system which costs about £15,000, is running at about 25 a month.

Systime took on an extra 226 people in 1981 to increase its staff by 26% to over 1,000. Further expansion is likely.

Scan Data helps untangle Onyx dealerships

By Claire Gooding

THE tangle of UK distributors for the US manufactured Onyx microcomputer has been partially resolved with Scan Data International buying out another claimant's "exclusive distributorship".

The Onyx microcomputer was one of the first to offer a version of the popular Unix operating system and should have had the market tied up. But sales were hampered by a divisive distribution policy both in the US and the UK, which made nonsense of the term "exclusive", confused potential buyers, and ended in court cases in the US.

A row arose between the manufacturer Onyx Systems, and the distributor with the name of Onyx Distribution, which ended with the manufacturer disowning the dealer and setting up its worldwide network — including Onyx Distribution UK, owned by Paul Joyce.

Last week Onyx Systems marketing manager, Tom Anthony, and Tom Reynolds, the new European marketing manager, after a drastic reshuffle at Onyx, came to the UK to sort out the distribution here.

Now Scan, one of the two UK distributors officially appointed by Onyx Systems, has bought out the name and other trimmings of Onyx Distribution UK for a sum which neither company will disclose. The arrangement has the blessing of Onyx Distribution UK, as well as Onyx Systems, according to Scan.

"Paul Joyce wanted to get out, and we were glad to buy the name, the goodwill and the customer base," said the deputy chairman of Scan Data, Martin Baldwin. Onyx Distribution will now trade as part of Scan's marketing set-up in Surrey. Scan will also take over the maintenance contracts held by Onyx Distribution UK.

The deal resolves the conflict happily for both parties, although the visit of Onyx top brass has not cleared up everything. As well as Scan Data and the other distributor officially appointed by Onyx Systems last year, Memec's Thame Systems, there are other dealers like Keen Computer which operate outside the official marketing structure.

"There's a huge market potential and we won't waste time fighting", said Baldwin, who puts Scan Data's share at about 60%. Dr Tim Keen of Keen Computer agrees: "We'll be seeing united marketing at last and from now on the Onyx market will look good."

The agreement should go some way towards settling Onyx's position in the UK. Although the machines are said to be selling well, the messy marketing situation was dissuading potential customers who have turned to other Unix lookalikes.

JEFFERSON . . . wrote to all employees.

Links to BT hold up Mercury

by Donald Kennett

LINKS to British Telecom's networks for international and national services are now believed to be at the centre of the talks between Cable & Wireless, the Department of Industry and BT on the licence for Mercury.

Mercury is the name of the alternative telecommunications network for business users proposed by C&W, British Petroleum and Barclays Merchant Bank. It has already had approval in principle from the DoI.

Parties to the talks are hopeful that agreement will be reached by the end of the month, but BT is thought to want complete control over any international gateways. It is reluctant to co-operate fully with a competitor which wants to concentrate only on the most profitable parts of its business, showing no interest in domestic subscribers.

BT chairman Sir George Jefferson has written to all employees to tell them that previous objections, BT believes there is plenty of private alternative network opportunities become more appreciated.

IBM is tipped as a favourite to become involved in future communications services. Last year it was involved in talks with BT and British Aerospace.

Despite Sir George's remarks some people believe that BT will try to delay all alternative network projects until the next election in the hope that a change of government will restore the monopoly.

Confusion over US trade embargo

by Kevin Cahill

WITH millions of pounds' worth of computer orders at stake, many of them already signed for, confusion reigns in relation to the American embargo on high technology exports to Russia.

The US has suspended, but not revoked, licences for the export of computer technology to Russia. But Rediffusion, which has received s £7.8 million order for the supply of viewdata systems to the Soviet Ministry of Gas in connection with the Siberian gas pipeline, has received its export licences and had no indication that they are about to be suspended.

Ken Coulter, marketing manager at Rediffusion, said that his company follows the government's rules in relation to exports to the Soviet Union, but so far the company has experienced no problem in shipping within the government's guidelines.

So far ICL has received no communication, but a spokesman said that ICL's business with Eastern Europe had been very quiet in the past few years. The Department of Trade has confirmed that no action has been taken so far, and no directive has been issued.

The Foreign and Commonwealth Office merely confirmed that Britain would act in concert with its European allies and that negotiations with allies are continuing. Europeans are supposed to act with the US under a joint agreement.

● In the United States over the weekend a British businessman Brian Hutcher from Cadex was arrested and charged with putting sensitive American technology to Europe without proper documentation. Butcher was released on bail of $10,000 and his passport was confiscated.

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DoI micros in the van

by Maggie McLening

A "MICRO-VAN" project organised by the Department of Industry was launched last week by Prime Minister Margaret Thatcher. Six mobile exhibition units containing microcomputers and other electronic office equipment will tour the country to raise general awareness of the importance of microelectronics in schools, offices and industry.

The micro-vans follow on from the Microtrain which toured major industrial centres for six months last year, and was also used for running courses for businessmen and teachers.

"The train which preceded this has been very successful. I think the right expression would be that the van will refresh those parts which the train could not reach," commented Thatcher, who visited the National Computing Centre in Manchester to launch the project.

Units in the £1 million project are divided into four parts to cover education, the general office, Prestel, specific applications such as medicine, legal and industry, and British Telecom equipment.

They will be based in London, Bristol, Birmingham, Manchester and Edinburgh.

THATCHER . . . launched the micro-van.

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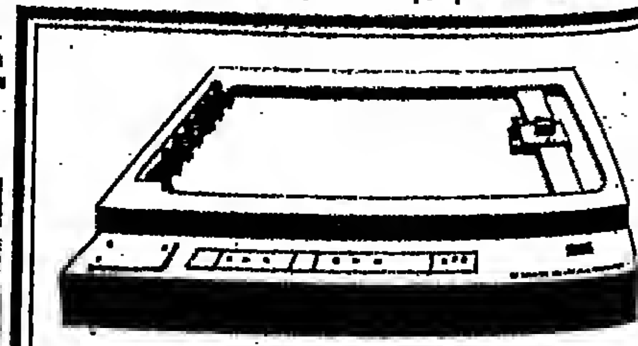

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Yorkshire Ripper case recommendations thwarted

Home Office delays more police systems

by Maggie McLening

POLICE forces are being denied the ability to use more computers to handle information on serious crime owing to the lack of a law on data protection.

Though urged by the Home Office to install more sophisticated systems the police are being restrained by their watchdogs, the local police committees, because of the dangers of collecting sensitive personal information whose security is not protected by law. And the Home Office is dragging its feet over the introduction of the relevant legislation.

The local committee for West Yorkshire has postponed a £1.7 million project to expand its use of computers, recommended by the inquiry into the handling of the Yorkshire Ripper investigation, because it saw the risk of individuals outside the police force gaining access to the information held.

In the US, private companies can now buy computerised criminal information, following a relaxation of the data protection laws, although this is limited to details of stolen cars. The UK would be expected to follow the Council of Europe recommendations on access, correction of errors and collection of information in the drawing up of any legislation.

The European Parliament is putting pressure on the British government to introduce a law to this effect by the end of the year by threatening to impose sanctions of an unspecified form. A suggestion by the Computing Services Association that there should be an Ombudsman for health and criminal records has met with no objection from the Ombudsman's Office, but there has still been no government action.

One of the main lessons of the inquiry conducted into the conduct of the Yorkshire Ripper murders investigation was that several lives might have been saved if the police had used a computer to collate and sift the documentation.

In a statement in the Commons, Home Secretary William Whitelaw said that ineffectiveness of the major incident room at the police headquarters, which became overloaded with unprocessed information, had been a serious handicap to the investigation.

He admitted that the systems necessary for use in the police service had yet to be developed successfully, and were not available at the time of the Ripper investigation.

He disclosed that the need to use computer technology was already being followed up with representatives of the police service.

In a report investigating the handling of the Ripper case by West Yorkshire Constabulary, inspector Lawrence Byford advocated standardisation of the procedures for major incident rooms so that compatible systems could be introduced in all police forces.

One computer project designed to meet this need was to be given a full scale trial shortly, Byford disclosed. Meanwhile the Home Office has been recommended to make available to chief constables guidance in the use of computers in crime investigations.

Earlier the Home Secretary had said that he saw no need for a comprehensive inquiry into the use of computers by the police because chief officers of police were well aware of the need to balance gains in police efficiency and effectiveness with safeguards for individuals. Police forces used computers for administrative and operational purposes and both uses had been approached with great care.

● County Durham police force is to go ahead with the purchase of a £2 million communications centre to be installed at its Aykley Heads headquarters this year.

Schoolboy Alexander Parkinson gets IT Year under way in Kent.

IT Year hoist on its own technology

INFORMATION technology didn't work very well at the London regional launch of IT Year at the new Wood Green Shopping Centre last week. The PA System was misbehaving, and the opening speech by seven-year-old Helen Laws was inaudible.

Then Thames Television arrived late and the whole ceremony had to be done again — but the message got across, and that was all that mattered.

In fact children are figuring heavily in the IT Year promotion, with young Alexander Parkinson the keynote speaker at a similar ceremony in Gillingham, Kent. IT project manager Ken Barnes claims that "children are the easiest people to train in information technology".

In common with the eight other IT Year regional committees across the country, the London and South-east organisers are arranging a series of exhibits and events to bring the message of the importance of information technology to as many as possible of the general public. In addition to displays at county shows and similar events, there will be seminars, conferences, and visits organised to demonstrate applications of IT in business, education, health care, leisure, and the home.

IT Weeks are planned by several London boroughs, and there will be a sponsored concert in Norwich Cathedral in December.

It is hoped to increase the number of IT centres, where disadvantaged young people are trained in basic electronics and computing, to 100 across the country. But the Department of Industry is having difficulty finding the money.

NEWS BRIEF

Software jobs saved

JOBS of the 30 staff at Oriel Computer Services have been saved following the purchase of the company from the receiver by the Midland Marts Group.

Oriel went into receivership in December with an estimated deficit of £90,000. The receiver had more than 70 inquiries for the Chipping Norton software house, which supplies specialist programs to libraries in the UK and Europe.

China invite

CHINA has issued an invitation to over 100 international companies to visit the country with a view to setting up joint ventures. The invitation, the first issued by the People's Republic, is mainly for computer and electronics companies, whose representatives are expected to visit in mid-June.

● Computer manufacture in China — page 23.

First in UK

READING University has installed the first Norsk Data ND-500 32 bit supermini in the UK. The installation forms the second phase of a £250,000 contract placed with Norsk Data by the University's Computer Centre, a central facility offering computer services to all academic departments on the campus.

BT joint venture

BRITISH Telecom has set up its first joint venture just a few days after announcing the formation of a new independent company to run the Dialcom electronic mail service. The joint venture, Martlesham Enterprises, will sponsor and finance commercial ventures in high technology as a spin-off from BT's research laboratories. Full story on new company BT Gold on page 3.

Control Data in bid to save Centronics

by Howard Karten and Kevin Cahill

IN a complex bid to rescue ailing printer manufacturer Centronics, and at the same time rationalise its own lack-lustre subsidiary Computer Peripherals Inc, Control Data has bid $25 million and its stake in CPI for 35.5% of Centronics.

A result is that ICL and NCR, which each own 20% of CPI will wind up with 4.7% of Centronics if the deal goes through.

Last year Centronics turned in losses of $24 million on turnover of $124 million, and forecast further losses for fiscal 1982. The losses were primarily attributed to high interest charges on its debts, which the company hopes will be reduced if shareholders and the Securities and Exchange Commission in the US agree to the CDC cash injection.

The transfer of the Computer Peripherals printer business, worth between $60 and $70 million, will leave CPI with little besides card and tape products. CPI is 60% owned by CDC, with ICL and NCR each owning 20%.

The company has a subsidiary in Stevenage, but an ICL spokesman said that ICL was only taking a small number of CPI matrix printers for its older machines and the deal would have no impact on ICL's business.

Sony UK wins in Hong Kong

by Donald Kennett

WHAT is believed to be the biggest UK export order for viewdata terminals, worth £325,000, has been won by the UK subsidiary of Sony. The order from the Hong Kong Telephone Company is tinged with some irony since in the early days of Prestel, UK manufacturers wanted protection from importers of Japanese equipment. But now a Japanese company has won an export order for UK-based production.

Hong Kong Telephone will

● Turn to back page

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Tandy pips Apple and Commodore at post with 16-bit microcomputer

by Robert Parry

THE first 16-bit microcomputer from the triumvirate of US manufacturers dominating the lower end of the West's business microcomputer market will come from the Tandy stable later this year.

The company is to move rapidly up-range with its TRS-80 Model 16, which will use a Motorola 68000 16-bit microprocessor as well as the Z80A used in current TRS-80 models.

The effect is to allow access to much more memory than an eight-processor, and faster operations on more complex data. The Z80A will relieve the main processor of housekeeping tasks, and give software compatibility with the existing Model II.

Compatibility with models lower in the range is expected to encourage users to move to the more powerful system. An enhancement board carrying the 68000 processor will be offered as an option for the Model II.

The basic unit with 128K RAM will sell for $5,000 in the US. Tandy hopes to catch its rivals on the hop with a machine offering higher performance than top-of-the-line models from Apple — and other of the leading three — and IBM, but in the same price range.

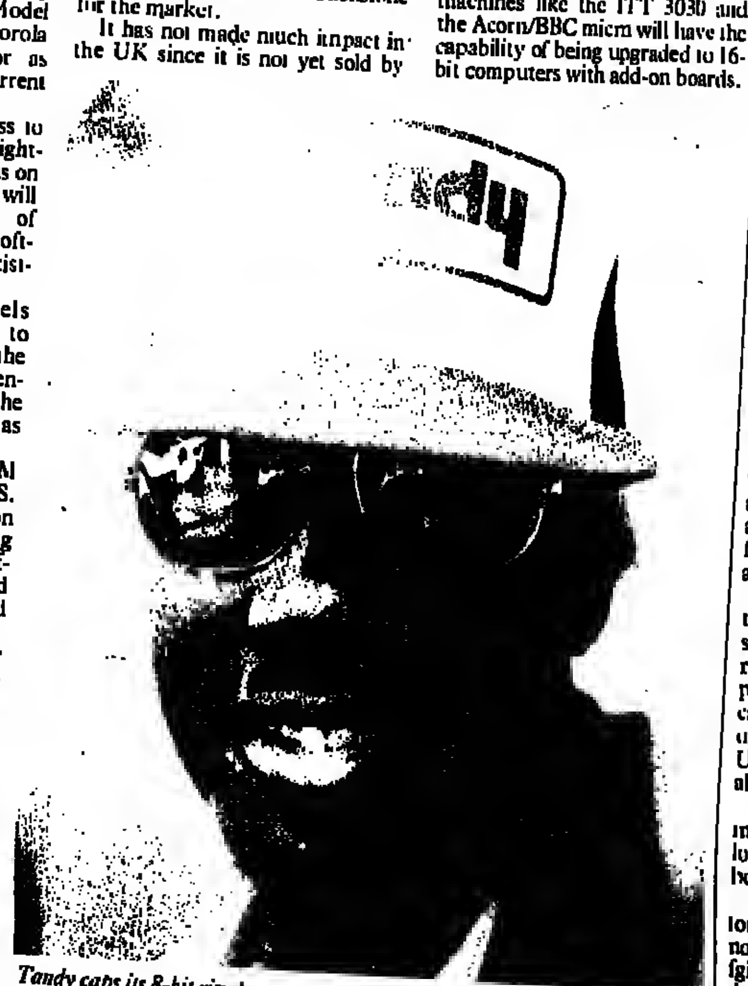
The Apple III suffered many teething problems and was recently relaunched after a disastrous first year, but a 16-bit machine using the 68000 is rumoured to be in the offing.

High performance machines are expected to be announced this year by Commodore, the third of the big three, which last week revealed plans for a machine to emulate rival eight-bit microcomputers at the lower end of the market. Xerox is also expected to bring out a 16-bit machine.

With these moves, 1982 is set to be the year of the 16-bit micro business machine, in a market driven by IBM's Personal Computer. Since its introduction last year, IBM has launched a huge TV advertising campaign in the US, and is starting to look like a touchstone for the market.

It has not made much impact in the UK since it is not yet sold by IBM itself.

IBM is being harried by newcomers like Sirius and established 16-bit micro makers such as Altos and Convergent Technologies. New entries to the eight-bit market are also pushing upward; machines like the ITT 3030 and the Acorn/BBC micro will have the capability of being upgraded to 16-bit computers with add-on boards.



Tandy caps its 8-bit rivals.

CAUSLEY . . . "With Sequoia, we have hit the ground running."

£1m orders for CMC fast 32-bit system

by Andrew Thomas

A 32-BIT system from CMC has attracted over £1 million in orders since its UK launch last week.

The Sequoia is claimed by CMC to run much faster than other small business systems, a performance improvement stemming from faster circuitry, larger main store and improved logic.

The architecture is unusual in that function independent processors handle I/O and both local and remote diagnostics. In the event of problems, CMC says its engineers can use dial-up facilities from one of the 26 engineering centres in the UK to run test routines which are already resident in the Sequoia.

A CMC spokesman said that in many cases the engineer could locate the source of the trouble before leaving for the site.

Jerry Causley, managing director of CMC Leasings, said: "It's normally not an easy task to secure first orders for a totally new product, but with Sequoia we have hit the ground running."

Honeywell to c[ut] stake in CII-HB

by our French correspondent

HONEYWELL has finally decided to cut down its stake in CII-Honeywell Bull in France. The move was announced in America last week by Edson Spencer, the Honeywell chairman.

In the first instance it will involve a reduction in Honeywell's holding from 47 per cent to 19 per cent.

Honeywell's profits fell from $288.9 million to $250.1 million last year due largely to losses of CII-Honeywell Bull. By taking its stake in CII-HB below 20 per cent, Honeywell will no longer have to include the French company's losses in the main company's balance sheet.

CII-Honeywell Bull was created in 1975 with participation by Honeywell, the French State and Machines Bull, a holding company 51% owned by Saint Gobain.

At the time, the Americans were given a get-out clause allowing them to reduce their stake if any of the shareholders of the company were nationalised: Saint Gobain is due to be nationalised [...] week or so.

Negotiations be[tween the] French govern[ment and] Honeywell in Americ[a are] going on to decide what [role] Honeywell will play in the [govern]ment's plans for restru[cturing the] French computer indu[stry].

These include a c[...] tion involving Thomso[n] to be nationalised, CII [...] Saint Gobain, particula[rly] development of the se[...] tion minicomputer.

Thomson has already [had] talks on the mark[eting of a] minicomputer with the [...] company SEL and has [...] start talks with CII-HB [...] the government's behest.

It is thought Honeywell [would] rather pull out of Fra[nce alto]gether and cede its oth[er 19 per] cent to one of the other [...]. The French governme[nt, on the] other hand, is understoo[d to be in] favour of keeping tech[nical and] commercial co-operatio[n with] Honeywell.

AT&T bid could co[st] Irish company £40m

by Kevin Cahill

AMERICAN Telephone and Telegraph's first show of muscle in Europe, a bid for the Irish company Telectron, has lost Telectron access to a £40 million switching contract as well as its 50% stake in a joint venture with Alcatel of France.

Telectron is the prime local contractor for transmission equipment in the Irish Post Office's £800 million revamp of the phone system, and won £40 million worth of contracts, mostly for switching equipment which it does not currently make.

Telectron did a deal last year with French-based CIT-[Alcatel] which the two compan[ies] share 50% in a joint ve[nture to] manufacture the equipm[ent for the] contract.

But when Alcatel d[iscovered] that AT&T was bidding f[or a] stake in Telectron, it an[nounced] that it was taking [its] stake in the joint venture, [forcing] Telectron to end its part[icipation] and switching the remai[ning stake] to Irish business interests.

A spokesman for Alcatel [...] said his company would [not be] able to accept as a partne[r a com]pany part-owned by AT&T.

'We want our money,' say CACI ex-employe[es]

by Boris Sedacca

NEW management at the London branch of US consultancy CACI is being accused by former employees of delaying payments due to them following their departure in a drastic re-organisation.

"They are dragging out the settlements and the pay for notice period, accrued vacation and expenses — things which are normally supposed to be paid on the spot quite separately from any other claims for compensation," said one ex-employee.

CACI is a US consultancy firm based in Delaware which specialises in defence contracts. But the UK branch, set up seven years ago by Tony Carter, its vice-president, took a commercial slant and rapidly established itself as a leading database expert in Europe.

The departures began when CACI's president, Dr Bill Fain, was pushed out after a boardroom battle with the chairman, Herb Carr. Reorganisation of the company's elaborate financial structure, involving a tax haven in Bermuda, was completed towards the middle of last year.

In his 15 years as president of CACI, Fain had built up the company's international operation. It acquired its own identity separate from the US parent, which only exercised control through financial ties.

A corporate housecleaning operation followed Fain's sacking, with 22 employees from CACI's 160-strong European operation losing their jobs since May 1981 and another 40 resigning.

Now no staff remaining at CACI have been with the company for more than three years. The US parent company replaced Tony Carter as chief executive officer of the European operation with a US national, Ron Stout, [who] recently also pushed out [its] European vice president and base specialist Ian Palmer.

Former staff are now c[laiming] that CACI is delaying p[ayments]. "They are muscling their [way] a superior bargaining p[osition]," one said.

They also say that moral[e in] the company is very low a[nd de]scribe present employees a[s afra]id of being fired.

Neither Stout nor Ca[rter was] available for comment at th[e time] of going to press.

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French to keep US out of mini industry

DARMON . . . Merger plans excluded.

by Jack Gee

THE French government's plan to develop the manufacture of minicomputers is getting under way with progress in talks between Thomson-CSF and CII-Honeywell Bull, despite the delay in nationalisation.

It is also becoming clear that any US involvement is to be strictly excluded.

Nationalisation of Thomson and of Saint Gobain-Pont-a-Mousson, which holds a 53 per cent stake in CII-Honeywell Bull, has been temporarily thwarted by the Constitutional Council's ruling that compensation for shareholders is inadequate.

The law embodying the proposals for public ownership has been sent back to Parliament for amendment of seven key articles and now cannot be enforced until late February or even March.

Jacques Darmon, a senior manager of Thomson-CSF, said that arrangements with CII-Honeywell Bull will enable his company's computer manufacturing subsidiary SEMS to "play an inspiring role".

Darmon added: "This agreement must respect the personality of the two firms involved and exclude any plans for a merger."

Maxime Bonnet, chairman of CII-Honeywell Bull, and Jacques Petersen, managing director, are taking part in the discussions with Thomson. Each group is to receive 600 million francs (£60 million) for the minicomputer project.

On the recent government veto of a minicomputer deal between SEMS and the American manufacturer SEL, Jean-Claude Hirel, the government's director for information technology, said: "Development of a strong French computer industry is not compatible with bringing a foreign partner into the market."

MP wins first round for data protection

by our Parliamentary correspondent

A CAMPAIGN by former Labour Industry Minister Michael Meacher to ensure the protection of confidential personal data held on computer has taken a step forward.

He has introduced a 10-minute Bill in the Commons which would set up an independent protection authority to ensure that new information technology is not abused by security services or government departments.

Although the Bill has very little chance of ever becoming law, it will serve to prod the government into coming up with its own data protection legislation.

The government is believed to prefer that the Home Office should act as a watchdog over the protection of computer data.

This is unacceptable to Meacher and his supporters, who are drawn from all parties at Westminster.

A Home Office White Paper on the subject is not now expected to emerge until Easter.

Applying for leave to bring in his Bill, Meacher said he was following the recommendation of the Lindup Committee which published a report in 1978 urging the setting up of an independent data authority to regulate and supervise this whole area.

Need for controls over the collection and use of personal information had grown enormously in the last 10 years. A previous government White Paper revealed that there were no fewer than 220 different functions carried out by central government involving computerised personal information about identifiable individuals. Most computerised databanks contained between 10,000 and 1 million names.

Meacher was worried that government officials might have almost instant access to all the information now held separately on one individual, including criminal records, income tax returns, medical treatment, credit rating and political and trade union activities.

He also believed that computerised databanks were particularly vulnerable to espionage, eavesdropping and error.

An individual's privacy could be threatened by information collected unlawfully, by underhand methods or without his or her consent, Meacher feared. Or people could be dismissed abruptly because of speculation in an investigator's report about their sex life or politics.

Meacher said his Bill would set up an independent data protection authority with a duty to establish statutory codes of practice. All operators of databanks would have to register with the authority and could be de-registered for not abiding by the codes.

People would be given the right to see, and if necessary, challenge and correct, the contents of personal records.

Meacher, who is backed by the Labour Party's Civil Liberties Group, drew particular attention to the police national computer, which, he claimed, held over 36 million entries.

Meacher was alarmed at the revelation that special branch files in Devon and Cornwall contained entries about people for wholly inappropriate reasons, such as involvement in anti-nuclear campaigns, opposition to blood sports, or membership of the anti-apartheid movement.

UKITO pressure group plans comeback

by Boris Sedacca

THE UK Information Technology Organisation, UKITO, is planning to stage a comeback after a dormant period of one-and-a-half years.

The controversial pressure group of British-owned computer companies was formed in January 1980 to lobby government on procurement policies and to advise it on the implications for the British computer industry of GATT and EEC regulations on international markets.

By July 1980, UKITO claimed to represent over half of the British computer industry, but then gradually faded from the public eye. Critics of UKITO described it as an ICL creation to put pressure on the government to award it the PAYE contract.

One reason given for the need for UKITO was that the Computing Services Association was not suitable for a lobbying role, because it included companies owned by overseas interests — a comment which raised the ire of CSA director-general Doug Byeions.

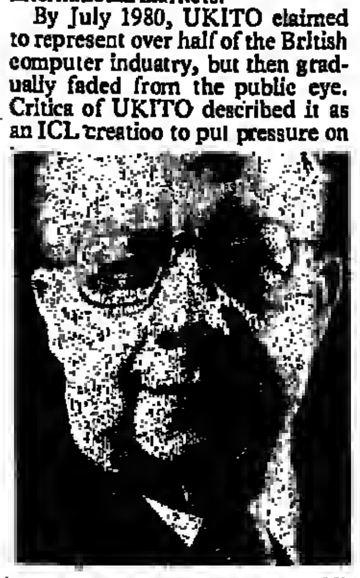
"We made clear our case against UKITO at the time and we are glad the whole thing has faded away now," he said.

However, Harry Johnson, chairman of UKITO and sales director at Ferranti, insisted that UKITO is still very much alive: "We now have 20 members who get together from time to time, and we decided at our last council meeting in mid-December to become more active again.

"Although the government has been expressing policy views that we like, they have not been carried out," he said.

Johnson would not quote specific instances where government policy had not been carried out. He added: "The honeymoon period is now coming to an end. Although people like Kenneth Baker, Minister for Information Technology, and even the Prime Minister herself have been making statements which sound like music to our ears, we are beginning to be disillusioned.

"People working at the procurement level are not carrying out policies made at the top," he said.



JOHNSON . . . Back in the public eye.

BT goes for Gold with independent company

by Donald Kennett

BRITISH TELECOM has set up its first independent company, called BT Gold, to market the Dialcom electronic mailbox and office information services. BT signed a licence for the services in October.

The company will be funded by BT and headed by a BT man, John Morris. But Morris will hire his own staff — 12 initially, building up to 25 — to sell, operate and develop the range of services.

He will have a relatively free hand in running the firm, although it will operate on behalf of British Telecom Enterprises under contract.

BT stresses that the new company is not a subsidiary. It is owned by two accountants, Jonathan Hoffman and Howard Kenton, who have nominal shareholdings.

Hoffman is also one of the three directors, the other two being Morris and Dr John Short. Short was previously head of product development and marketing in BT's business systems division.

The financial arrangements require British Telecom to pay BT Gold a management fee and cover its running costs, while BT Gold will hand over all revenues.

The company was set up this way because the market is new and needs a specialist company with specialist expertise to handle it, a spokeswoman said.

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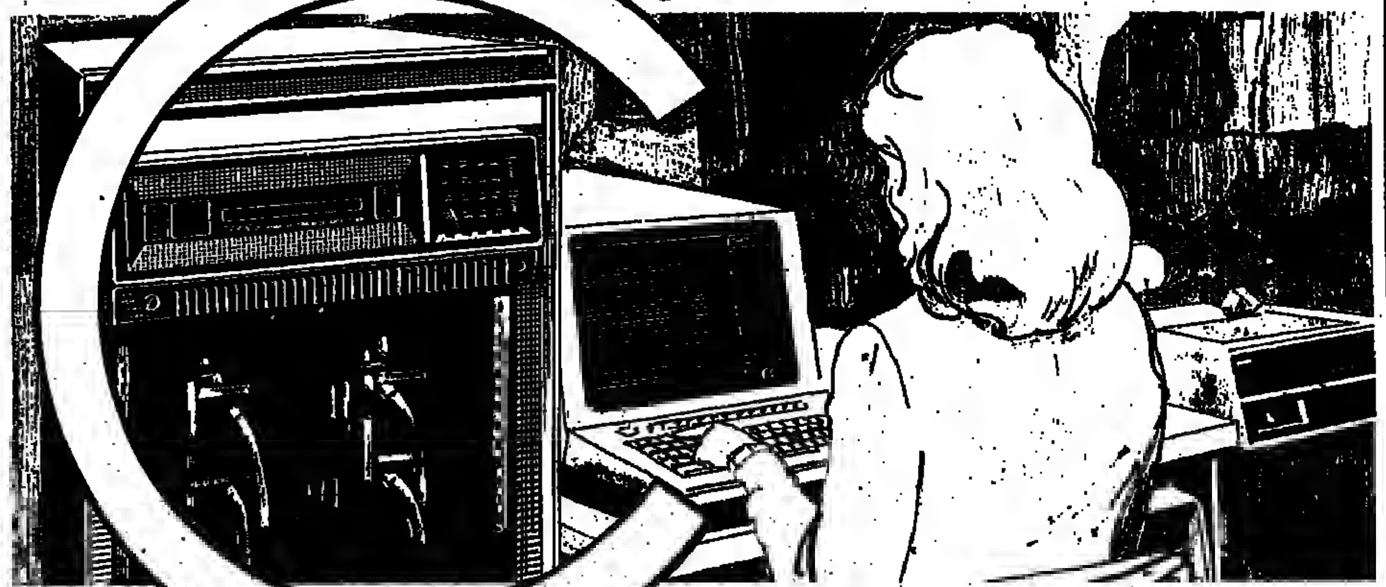

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First UK attack on the Unix hardware front

by Claire Gouding

THE first British hardware manufacturer to respond to the Unix boom is already gunning for the export market with a new machine, the Bleasdale 600 Universal Computer.

The system was released last week as the first UK equipment specifically designed to run the Unix operating system.

The system is designed for anything from banking to computer-aided design and manufacture, CAD/CAM and software development. Bleasdale predicts that there is a big future abroad for the machine, where according to managing director Eddie Bleasdale, Unix business will be worth more than $9 million by 1986.

Bleasdale has already set about establishing a European network of dealers, and the first system was handed over last week to an international printing firm, Monotype, by the Minister of Information Technology Kenneth Baker.

Unix was designed as a multi-user time sharing operating system for Digital Equipment kit by Bell Laboratories, the research arm of US telecommunications giant AT&T. It has become enormously popular because it is a ready-made and proven portable operating system with many programming utilities.

The Unix trend has already spawned two machines in the US, the Plexus and the BBN "C" machine, both specifically designed to run the operating system. Now Bleasdale Computer Systems has produced its own version which is aimed not just at the scientific and educational market courted by BBN and Plexus, but at industrial and commercial applications as well.

Bleasdale was the first firm to be funded by the Joint Approval Scheme, involving funds from Barclays Bank and the Department of Industry's Microprocessor Applications Project. The new product, announced last November, is already in production at Bleasdale's factory in Lutterworth, Leicestershire, where output is planned to reach 500 this year.

The 600 uses Xenix, the micro version of Unix written by the US firm Microsoft and marketed in the UK by Logica. It is based on the Zilog Z8000 processor, supporting 256K memory, 500K of floppy disc storage and a 10-megabyte Winchester disc.

BLEASDALE . . . *Big future abroad.*

NEIL of ACL . . . switching to large turnkey software projects.

Tandem set for European push

by Philip Hunter

A PUSH to sell Tandem Non-Stop computers in Europe has been launched by a UK systems house following its takeover by US Tandem specialists Applied Communications Inc.

Six extra staff have been taken on and an in-house Tandem Non-Stop II bought to promote a switch to large turnkey software projects, which will bring the operation in line with the parent company.

The UK subsidiary, now called Applied Communications Ltd, ACL, was part of French telecommunications house Sesa until the takeover in December. Former Sesa UK managing director Malcolm Neil has stayed on as head of ACL, as have most of the old staff.

"We are still looking for people with Tandem experience, but these are not easy to come by," Neil explains.

Hoskyns software monitors cancer fund

by Claire Gooding

SOFTWARE to monitor the £16 million that is spent annually by the Imperial Cancer Research Fund on cancer research has been developed by Hoskyns Systems Development.

Cancer research has expanded so fast in the last 10 years that the London-based research fund needed software which would allow it to control expenditure on equipment. Hoskyns came up with a turnkey solution, based on its modular range of MAS-M applications for Digital Equipment kit.

The old manual and batch systems were replaced with an on-line purchasing, purchase ledger, and general ledger which monitor any proposed expense immediately so that the ICRF is not faced with an over-budget reckoning at the end of the month.

The system is based on a PDP-11/44 bought through Hoskyns as part of the deal.

"The main problem was that the ICRF has to be very cost-concious because so much of its income comes from people standing on street corners with tins," explained sales manager Sean Foster.

"Because it is a charity we helped as much as possible," said project manager Brian Savage. "The system met most of the long-term requirements and the main enhancements were to make it easier to use. The ICRF was not happy about having a totally interactive system and so we have combined batch and interactive to give them the best of both worlds."

Data Type buys OEM firm from receiver

by Boris Sedacca

IN a move to expand its European distribution, South Wales microcomputer and terminal manufacturer Data Type has bought the German terminal OEM Teledynamics from the receiver.

Frankfurt-based Teledynamics is the German subsidiary of Data Dynamics, which went into receivership last November. No buyer has been found yet for the UK parent, although Teledynamics has continued to trade normally.

Teledynamics has a current turnover of about £2 million and employs 17 people. The money that changed hands is in the order of £500,000 comprising equity and loan capital.

Data Type announced last November funding worth £325,000 for the company from Citicorp Development Capital, which it had earmarked for research and development. But according to Gerry Tuffs, managing director of Data Type, an additional £500,000 worth of financing was made available which has now been used for the Teledynamics acquisition.

"We expect to make further acquisitions in Europe and have started negotiations with companies in Switzerland and Holland. We still have some money in the kitty for this," he said.

"We are looking to expand our marketing in Europe for a graphics board which converts a Televideo editing terminal into a Tektronix 4010 compatible device.

"We have exported about £750,000 worth of them to Japan, Hong Kong and the US in the last 18 months."

Data Type was set up in 1978 and its turnover has grown from £169,000 in 1979 to £1.8 million in 1981, and has projected a turnover of £3.7 million for its year-end accounts in May 1982.

"By the end of the year we will have a consolidated turnover of £8.5 million with the German company. We have also set up a US subsidiary to manufacture the graphics board which was previously manufactured under licence by MQI Computer Products."

TUFFS . . . "We'll buy more European companies."

A guide to DP training

by David Graver

WHAT is claimed to be the first comprehensive guide to training in the UK data processing industry has been released. The Directory of Training, to be published annually, covers government and private sector courses and conferences, details on how to obtain grants, professional qualifications and DP research programmes.

Courses for both state of the art techniques and the training of inexperienced recruits are included, and editorial director Colin Steed hopes that the directory will become an industry standard reference.

Directory of Training, ... Publications ...

SALES BRIEF

UK firm wins Euro space contract

CAMBERLEY based Systems Designers has won a £70,000 contract from the European Space Agency for software to calibrate digital radar images collected from the ... a series of collaborative experiments involving about ... European research institutes. The calibration will contribute to the planning of ESA's ERS-1 satellite which will carry high-resolution three-frequency radar equipment similar to that used in the experiments.

Metplan installed

COLCHESTER systems house Mellordata has installed its Metplan flight and weather information display system at Brunei Airport under a £70,000 contract placed through the UK Civil Aviation Authority. The system is based on a Digital Equipment LSI-11 with Datamedia DT80 VDUs and it is expected to attract the interest of many smaller airports, since it is claimed to be considerably cheaper than the traditional closed-circuit television display systems.

Apollo the teacher

WARWICK University has installed a £24,000 Apollo Domain multiprocessing workstation for teaching work in the psychology department. Based on a 32-bit processor, the Domain (Distributed Operating Multi-Access Interactive Network) runs up to ... Pascal or Lisp processes at once under a Unix-lookalike operating system.

Mosaic parts

IA DATASYSTEMS has received three more orders for its Mosaic automotive parts inventory control system designed to run on ICL 1500 and DRS 20 machines. Francis Parker Commercial Vehicles is to install the system in two of its depots in Sussex and Kent, Ray Dell Motorcycles of Pudsey, near Leeds will run it on a three-terminal DRS 20 and London-based Derek Loan Motorcycles will use a two-terminal DRS 20.

Transfusion

WEST Midlands Regional Blood Transfusion Service is to install a CTL 8066 from Computer Technology, to go with its three-year old CTL 8050 and take on the blood donor records, stock control and ante-natal test reporting systems previously run on an ICL mainframe at the Regional Health Authority. The 8066 will share files with the 8050 via a dual-ported 48-Mbyte disc drive and will have one Mbyte of main memory backed by two 300-Mbyte disc drives.

£1.25m system

MOTOR INSURER National Insurance & Guarantee has ordered four Honeywell DPS 6/76 minis, the largest 16-bit machine in the range, which together with the system software to be supplied under the contract will cost over £1.25 million. The machines will be used to provide online underwriting, claims, statistics and accounting facilities accessible from about 100 locally-attached TDS colour VDUs. Due to go live in November, the facilities will use Honeywell's TPS transaction processing system and will run under GCOS 6.

For safer flying

EUROCONTROL, the European Organisation for the Safety of Air Navigation, has placed orders for IBM 4341 and Siemens 7865 computers and Memorex peripherals to replace equipment at its experimental centre in France. The centre's team of 180 conducts research on, and evaluation of air traffic control software, navigation

Next seminar London 19th February

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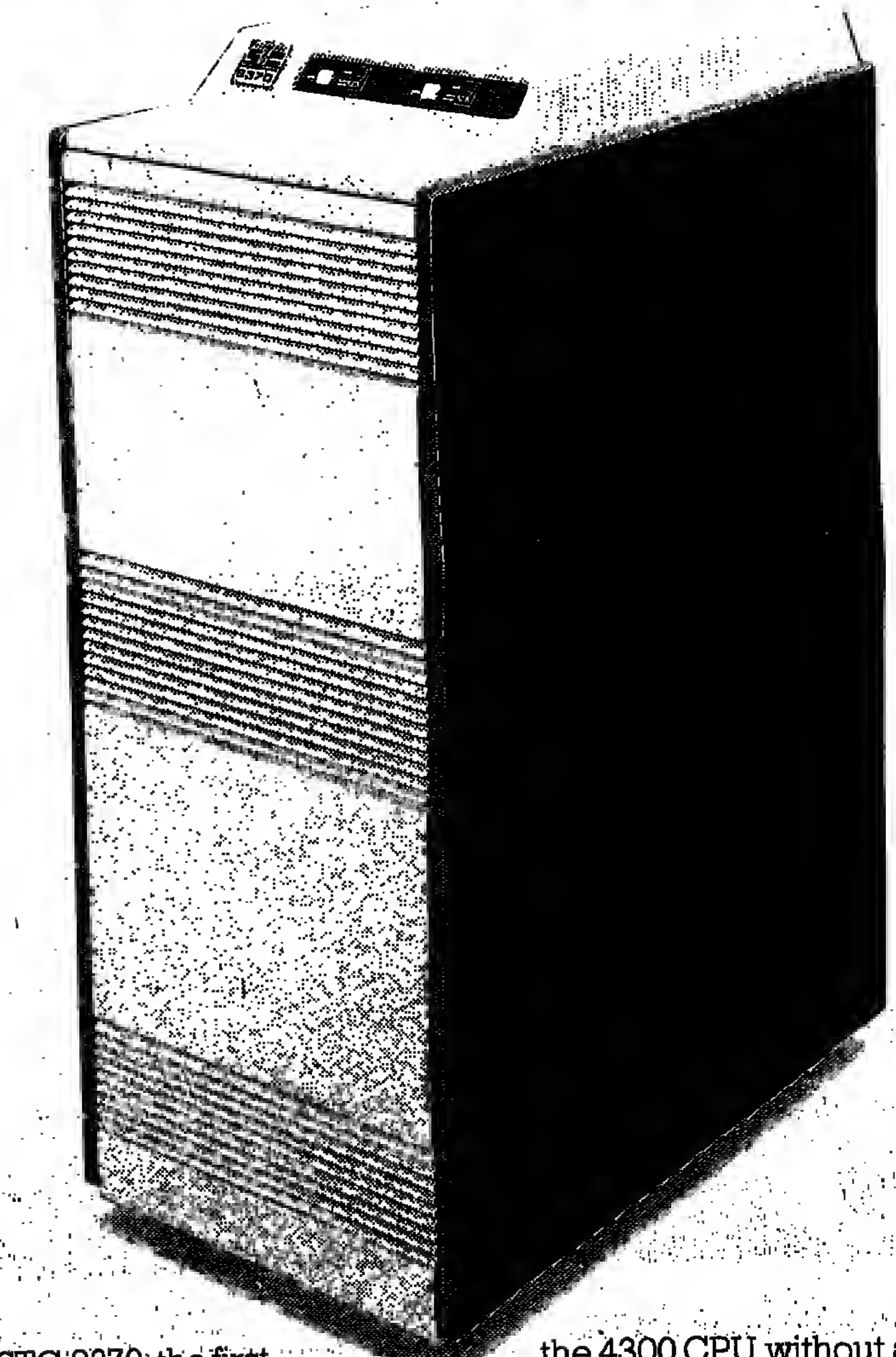

With the STC 8370, the first viable replacement for the IBM 3370, Storage Technology have combined thin-film technology together with fixed-block architecture.

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Over 27,000 braved snow, fog and rail strike to see the Which Computer? exhibition. Robert Parry reports

Texas Instruments puts its growing family on show

WITH an eye firmly fixed on the market for expandable systems, Texas Instruments featured at the Which Computer? Show its extended DS990 family of computers with packaged systems using Texas-manufactured Winchester discs for multi-user applications and a line of small business computers aimed at first-time users.

In the mid-range computer OEM market, estimated by Texas at £150 million in the UK, David Monk, UK computer product manager, sees a need for systems supporting four to 12 workstations with 20 to 40 Mbytes of memory. It is this niche that he hopes to fill with the Model 5, the Texas computer to use its 8-inch Winchesters, and Model 3, with 5¼-inch Winchester drives.

"We expect business buyers to find the Models 3 and 5 most attractive," says Monk, adding that they offered better price/performance ratios for high throughput applications like accounting or sales order processing. The ratio is enhanced by a five per cent cut in prices for all computer products, introduced at the same time as the new models.

The Winchester-based Model 3, using Texas 5 Mbyte 5¼-inch drive, more than doubles storage capacity (compared to the floppy-based version) for a price increase of about £600. The 8-inch drive used in the Model 5 comes in 18 Mbyte or 43 Mbyte versions, with 14 Mbyte cartridge tape for back-up or software transport among systems. As the price of these 8-inch drives falls, Monk expects the Model 5 to supersede the current Models 4 and 7 mid-range machines.

At the lower end of the business systems market, where many customers for such multi-user computers first come in, Monk sees many machines vying for market share. "So many models are really no more than personal computers. If you try to put on more than one user, you rapidly find out where the limitations of these small systems are."

Texas's offering for small businesses starts with computer automation, the Business System 200, which provides compatibility with large members of the DS990 family. Texas Instruments expects to make much of this and the easy upgrade path it promises. System 200 starts at dual 5¼-inch floppy disc systems for £4,730 – some £2,000 below the bottom-end DS990 Model I – and extends to twin 5¼-inch Winchesters with 8-inch floppy as back up giving 11.2 Mbytes storage.

Like the other DS990 family machines it uses Texas's 9900 microprocessor. It runa Cobol programs under DX10 Micro operating system.

MONK . . . Hoping to fill a niche.

Games aid disabled

ALTHOUGH the Which Computer? Show is aimed primarily at the first-time business user of computers, that other large microcomputer market, games players, was also catered for.

Apple, Commodore and Atari had games demonstrations on their stands – Atari featuring new UK-written software for its 400 and 800 personal computers – which attracted the usual experts among the 27,000 visitors to the four-day show.

But Tandy did better. Its games playing raised £780 for Muscular Dystrophy, thanks to visitors playing pinball on Tandy machines. Each player contributed a minimum of 50p for a chance to get the highest score and win a £449 Tandy Colour Computer. By the end of the four days, £390 had been collected, which was matched pound-for-pound by show organisers Clapp & Poliak.

PUNTER . . . "People are very much buying on the IBM name."

Personal Computer catches on in UK – behind IBM's back

THE micro from mainframer IBM is proving more of a draw in this country than importers Microcomputerland first expected. The London-based company, set up last autumn to concentrate on shipping the IBM Personal Computer from the US reports 36 machines installed and orders for several hundred more. It is shipping 10 units a week and expect this to rise to 20 a week shortly.

"We thought we would be selling to small people mainly," said Microcomputerland director Mick Punter, "but we are also installing them in big companies." The list includes Shell, BP, BL, Cable & Wireless, the CEGB, Gillette and London's Imperial College.

Most sales are for one or two units, but Punter feels there are a number of larger companies trying out the machine.

"People are very much buying on the IBM name," he said.

If the computer finds favour, he is hoping for orders of large numbers from some of these customers.

Punter was speaking at the Which Computer? show at the National Exhibition Centre in Birmingham last week. Held for the second time, the show braved snow, fog and the rail strike to display mainly microcomputer-based systems to the first-time user.

Punter was there weaning his Microcomputerland but rather than that of managing director of software house Zeus-Hermes. There was no connection between the companies, he said, but he did not rule out future links. After a year or so they would see whether Microcomputerland could benefit from a large software house like Zeus-Hermes, he added. Zeus-Hermes started moving into the IBM applications software market last November.

His was the only place where visitors could see the IBM Personal Computer. The machine is not yet available from IBM (UK), so was not featured by IBM itself.

Punter has the feeling that IBM is letting Microcomputerland try out the water. He said there was no official reaction to its shipping in US units with mains adaptors, but was sure IBM was watching carefully.

Machine configurations start from twin floppy systems with 46K RAM and 40K ROM containing the DOS operating system and Basic, costing £2,950 with keyboard and monitor. They rise to 5, 10 or 20 Mbyte hard disc systems. More software is becoming available, and now includes CP/M 86 (for £288), Pascal and applications packages from Tabs and Peachtree.

● Visitors to the Which? show were able to see that other mainframe manufacturer's micro – the ICL Personal Computer – on two stands: ICL's and, across the aisle, Rair's. The machine is the Rair 3/30 Black Box computer by another name.

Nixdorf goes retail in UK market

MORE emphasis on the re- company is the central theme Nixdorf Computers' plans to versify its markets in the UK.

Introduction of point of systems and small minicomp will lessen the importance 8870 mini, which is planned drop from 95% of Nixdorf's sales to about 50%, the comp says.

According to Dale Birch, dorf's UK retail sales spec Nixdorf has researched the market for point of sale systems three years, seeing it now as major market to move in "There will be £480 million point of sale in the next two and I want a lot," said Birch two years I think Nixdorf ca achieve 20% to 25% of the ket."

In Germany the 8812 (Nixd PoS terminal for standalone or centralised systems based on 8862 computer) took around of the market within one Birch said. "The English mark a little more quiet, more rese in his approach."

However, Birch's experien the Which Computer? Show Birmingham seemed to show reserve on the part of pote buyers. It was the first time PoS systems had been on p show in the UK, he claims, a found the response "absolu overwhelming – I'm still smar from the effect of it."

Birch sees the ease of progra ming in Business Basic – by c tomers or by Nixdorf – as main feature distinguishing Nixdorf 8862/8812 systems fr PoS systems from competit IBM, ICL and NCR.

Standard packages for purcha retail applications such as dep ment stores, supermarkets, oil and carry stores and garag forecourts are available, but Nix dorf is concentrating on "vert specialty retailers" – in particu these show the Nixdorf system their best light, needing consid able flexibility in programming the application.

He also sees Nixdorf's powe in banking strengthening the a tailing side, particularly with electronic funds transfer coming Nixdorf leads the European ba ing terminal market, claiming to IBM's 26% with Olivetti fo lowing third. Nixdorf's first UK system, worth £6 million, was recently ordered by the Midland Bank.

Although the system has only now been show in the UK, Co Gas has installed 8862-based PoS systems in about 56 Color Centres around the country. The installation was completed last No vember. It is a specialised applica tion since the gas is sold on a bas of exchanging empty cylinders for full ones, and by law every cylin der, full or empty, must be ac counted for at all times.

The retail systems market is not the only new sector to be attacked by Nixdorf in the UK. Adam Buesst, product manager for the 8870 computers, sees an opening for systems aimed at companies with about 25 employees needing better control over accounts and stock and order processing. He categorises such firms as too big for microcomputers but too small to pay £30,000 for a mini system.

To serve such users, Nixdorf is introducing systems with minimum hardware and application software to be rented by users for about £500 per month. The price will include maintenance and standard software which would cost between £50,000 and £100,000 for the user to write, said Buesst.

If this approach proves successful Nixdorf is aiming to bring out small systems, based on Winchester technology fixed discs, later in the year.

Agencies lobby Revenue with tax plan for programmers

by David Craver

NEW proposals have been put to the Inland Revenue to revise its plan to tax contract programmers at source – a plan which, it is feared, would hinder the formation of new businesses.

Contract programmers and other workers who have set up limited companies would have 30% of their revenues held back when they work through agencies if a scheme set out in an Inland Revenue consultative document is accepted by the government.

Branding the language in the Inland Revenue proposals as "inflammatory", a 12-member group representing agencies and agency workers in the computer and other technical fields has called on the government to reject the Inland Revenue plan.

The latest government proposals, contained in a consultative document published in November, stem from Clause 34 in the 1981 Finance Bill. That clause was rejected after industry pressure, but the government has remained committed to introducing legislation which would tax contract employees at source in order to catch the large number of "cheats" who, it believes, are evading the tax net.

The action group suggests an alternative scheme which, it claims, is a "solution to the problem of tax cheats, while encouraging individuals to start their own businesses."

The contract worker would supply the agency with information such as the name, address, PAYE and tax district and reference number of his company.

That information would be supplied to Inland Revenue, and only if Inland Revenue found that the contract worker had a bad tax record, or no tax record, would it then instruct the agency to withhold 30 per cent at source.

The committee opposing the Inland Revenue scheme was formed in June 1981, and is jointly chaired by Walter Goldsmith of the Institute of Directors and Stan Mendham of the Forum of Private Business.

The Inland Revenue consultative paper, while stipulating that taxation at source is essential, would allow exemption certificates in some cases where a limited company could satisfy tax inspectors that it had and would continue to pay taxes. Where exemption is not allowed, money deducted by agencies could be set off against PAYE in the current tax year and, if appropriate, against corporation tax.

Mendham claims that the Inland Revenue proposals would deprive the computer industry of the flexible and mobile workforce it requires.

But at least one managing director of a company which supplies contract programmers is in favour of the Inland Revenue proposals. "Programmers who set up as limited companies operate unprofessionally," says Tony Antoniades, managing director of Eurolink Computer Services.

Taxation at source, he believes, will bring some professionalism, and he sees no reason why the self-employed should be treated any differently from the employed.

Joint chairmen of the committee opposing the Inland Revenue scheme: Walter Goldsmith (right) and Stan Mendham.

What makes the ideal job in DP

RECOGNITION of individual merit and intellectual challenge are the two most important features of the ideal job for systems analysts and programmers, accordiog to a survey* by BIS-Pedder.

And based on the difference between the ideal and the actual jobs held by the group surveyed, it is those two features which are in most urgent need of management attention.

"From management's viewpoint, employing computer staff must sometimes resemble walking through a minefield – you are never quite sure when the next one will go off," the survey quips.

The BIS-Pedder report, which looks at 204 individuals in 13 organisations in the financial sector, seeks to define areas where management must concentrate to maintain a stable data processing workforce.

Salary, which is third most important in the ideal job, is only tenth in the list of the features which need management attention. The ranking of those areas of which management should be most aware is calculated by multiplying the difference in score between the ideal and the actual by the inverse of the ideal rating.

The report finds evidence that computer professionals have more allegiance to their technology than to their employer. Encouragingly for management, most of the actions that they could take to improve job satisfaction do not require much investment, but rather reorganisation within the data processing department.

Most essential is "staff-directed management style" which is implemented downwards through the hierarchy of workers.

Career advancement was given as the main reason for leaving a job, with a change in personal circumstances and the desire for more money the other two most important factors.

The data processing staff in the survey were employed by four banks, eight insurance companies, and one stockbroker.

* *Job Satisfaction among Analysts and Programmers*, BIS-Pedder, 199 Westminster Bridge Road, SE1 7UT, 39 pp. £450.

SINGLE FACTOR MOST LIKELY TO LEAD TO RESIGNATION
(over total sample)

FACTOR CITED	NO. OF REFERENCES BY GROUP SURVEYED	% OF SAMPLE
Ambition/career development	51	25%
Change in personal circumstances (ie outside employer's influence)	43	21%
To obtain more money	40	20%
Dissatisfaction with job content or working conditions	25	12%
Boredom	6	3%
To obtain greater job security	5	2%
'Bad management'	5	2%
Other (imprecise or unclassifiable)	9	4%
No single factor or no answer	20	10%
Total	204	

KEY JOB FEATURES REQUIRING MANAGEMENT ATTENTION
(over total sample)

PRIORITY	FEATURE
1	Recognition of individual merit
2	Work which is intellectually challenging
3	Opportunity of broadening DP experience
4	A defined policy on career development
5	Good DP department internal communications
6	Opportunity for developing management skills
7	Regular performance reviews
8	Regular salary reviews
9	High DP department morale
10	Matching of salary to work contribution

Software house puts 'toe in water' with release of 16-bit micro

ANTONIADES . . . Looking for companies to take over.

by David Craver

WHEN it releases a 16-bit microcomputer in the next four to five weeks, Brighton-based Eurolink will have come a long way since it was formed three years ago as a contract programming agency.

Using the agency business as a source of steady cash flow, Eurolink first expanded into software, and about 50% of the £4 million revenues for the current year will be from bespoke applications systems development.

The micro, which is being assembled for Eurolink by LSI of Woking, is a "toe in the water", according to managing director Tony Antoniades. Eurolink will provide application packages, and will sell the system through its 14-man sales force.

Turnover for the year ending March 31 will be nearly double the £2.1 million of the previous year, and that compares with £300,000 in the first full year of trading.

Antoniades predicts sales will rise to £6 million in 1982, with the contract agency side still providing significant revenues, but representing an ever-diminishing volume of business.

Antoniades sees Eurolink competing with the likes of Hoskyns, Altergo and Logica, but in a different way. While acting as a software house, Eurolink uses a high proportion of its own contract programmers. That can cause some concern to the companies for which Eurolink does work, but all the project managers are permanent employees. Antoniades feels that the use of contract programmers gives Eurolink more flexibility in getting the right technical talent for particular jobs.

Typical is a £400,000 contract with Hitachi Sales UK, where about two-thirds of the 22 individuals on the project are contract staff. That job, for nominal and general ledgers and cash book, using a seven-colour display screen, has a seven-month turnaround from start to finish. As part of the deal an IBM 4331 was installed at Eurolink's offices for development work, although the system will be taken out after the work is completed.

Antoniades, who spent years in the toy industry and six years with "the competition" before joining Eurolink, makes no secret of his big ambitions. He says he is looking for companies to take over, probably with sales of about £500,000, and current expansion means adding about 10 employees a month on to the books. About 200 are now employed or subcontracted with almost one-third permanent staff.

In future Eurolink will put more emphasis on specialising in particular industries, with banking, insurance, and local government high on the list.

Nixdorf goes retail in UK market

MORE emphasis on the re- company is the central theme Nixdorf Computers' plans to versify its markets in the UK.

Introduction of point of systems and small minicomp will lessen the importance 8870 mini, which is planned drop from 95% of Nixdorf's sales to about 50%, the comp says.

According to Dale Birch, dorf's UK retail sales spec Nixdorf has researched the market for point of sale systems three years, seeing it now as major market to move in "There will be £480 million point of sale in the next two and I want a lot," said Birch two years I think Nixdorf ca achieve 20% to 25% of the ket."

In Germany the 8812 (Nixd PoS terminal for standalone or centralised systems based on 8862 computer) took around of the market within one Birch said. "The English mark a little more quiet, more rese in his approach."

However, Birch's experien the Which Computer? Show Birmingham seemed to show reserve on the part of pote buyers. It was the first time PoS systems had been on p show in the UK, he claims, a found the response "absolu overwhelming – I'm still smar from the effect of it."

Birch sees the ease of progra ming in Business Basic – by c tomers or by Nixdorf – as main feature distinguishing Nixdorf 8862/8812 systems fr PoS systems from competit IBM, ICL and NCR.

Standard packages for purcha retail applications such as dep ment stores, supermarkets, oil and carry stores and garag forecourts are available, but Nix dorf is concentrating on "vert specialty retailers" – in particu these show the Nixdorf system their best light, needing consid able flexibility in programming the application.

He also sees Nixdorf's powe in banking strengthening the a tailing side, particularly with electronic funds transfer coming Nixdorf leads the European ba ing terminal market, claiming to IBM's 26% with Olivetti fo lowing third. Nixdorf's first UK system, worth £6 million, was recently ordered by the Midland Bank.

Although the system has only now been show in the UK, Co Gas has installed 8862-based PoS systems in about 56 Color Centres around the country. The installation was completed last No vember. It is a specialised applica tion since the gas is sold on a bas of exchanging empty cylinders for full ones, and by law every cylin der, full or empty, must be ac counted for at all times.

The retail systems market is not the only new sector to be attacked by Nixdorf in the UK. Adam Buesst, product manager for the 8870 computers, sees an opening for systems aimed at companies with about 25 employees needing better control over accounts and stock and order processing. He categorises such firms as too big for microcomputers but too small to pay £30,000 for a mini system.

To serve such users, Nixdorf is introducing systems with minimum hardware and application software to be rented by users for about £500 per month. The price will include maintenance and standard software which would cost between £50,000 and £100,000 for the user to write, said Buesst.

If this approach proves successful Nixdorf is aiming to bring out small systems, based on Winchester technology fixed discs, later in the year.

French govt opts for US computer

by Jack Gee

THE French government is compelling its scientific civil servants to buy a €2.8 million American-made computer from CII-Honeywell Bull in preference to a French-assembled IBM model in the framework of its "Buy French" policy, senior officials revealed in Paris.

Government scientists said the Honeywell computer, a DPS 8/70, is intended to be used as afront end processor to feed information into a £7.3 million Cray unit.

The Cray-L has been chosen for the Polytechnique School near Paris where it will be used for civilian and military research as well as meteorology. It will also be used by the CISI computer service company.

But government scientists are criticising the choice of the DPS 8/70 not only because it is an American import but on the grounds that it is inadequate for the task as a front end processor for the Cray.

They point out that it requires American software and exists only as a prototype at the Honeywell plant in Phoenix, Arizona. It is also unlikely to be available in time for the delivery of the Cray-L.

Meanwhile the French national weather service and the CISI have obtained government permission to connect their own computers to the Cray. But purely scientific users have been told they are "sentenced" to the Honeywell computer.

Electricité de France, the French power generating utility, has been told it can connect to the Cray via an IBM 3033N which is assembled at IBM's plant in Montpelier, Southern France.

Langton opens a viewdata bureau

LANGTON Information Systems has opened a viewdata bureau called Interview in partnership with Mills & Allen, a major Prestel information provider and viewdata consultancy. The service is based on viewdata specialist Aregon's IVS-3 software running on a Systime 6400 with 16 access ports and 50,000 frames of disc space initially.

Charges start at £500 a month for 1,000 frames of disc space.

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SOFTWARE FILE by Claire Gooding

IP Sharp markets finance service to multinationals

APL specialist IP Sharp is attracting new customers with a time sharing service which allows multinational companies to make sense of financial results coming in a variety of currencies.

The new service, called Consol, was the brainchild of Margaret Reilly, an economist whose background in European and US finance convinced her that there was a real need for a tool which could cope with lots of different currencies.

The job of analysing multinational results is made more difficult by fluctuation in the values of different currencies. Reilly wrote Consol so that corporate headquarters could collect financial results from different countries in the local currency, and then analyse and manipulate the results from a central point.

The people who want their financial consolidations computerised are usually at management level in international companies, but according to Reilly the sizes and turnover of Consol users vary widely.

Even for a company totally new to computing, Consol can save valuable resources, explained Reilly, by freeing highly paid financial analysts to do the skilled part of their task.

The time spent gathering, checking and consolidating the data is much shorter, which means that the results are faster and, being up to date, more valuable.

Reilly reckons that Consol can cut five to 10 days off monthly consolidations — a saving spread to all users in the various countries in which a multinational company deals.

Reilly, who now works as Consol product manager for IP Sharp's Canadian headquarters, first came across APL when working for the US federal government in Washington at a time when fast-changing currencies made her job as a financial analyst very difficult.

APL is a symbolic high-level language whose strength is in the manipulation of data. The fact that it works from compact and powerful symbols means that results are immediate.

"The sooner you get results, the happier everyone is," said Reilly. "It is vital that the data gets dealt with quickly. What I like about APL is that I can respond more quickly to customers' requests. It is an amazingly powerful tool — that is why I'm an APL programmer now, not an economic analyst!"

The tool has further spin-offs in that the company builds up a valuable historical network of financial data which is then available to the analyst for other purposes, such as planning, modelling and long-term analysis.

REILLY . . . quicker results.

ADM director Ian Andrews and consultant Frances Moseley.

High-level productivity aid allows programmer and machine efficiency

AT a time when computer people were only just beginning to tear their hair about programmer productivity, one Canadian programmer at an IBM installation in Paris had been beavering away at the problem for close on ten years.

Surprisingly the programmer, Ray Smith, now a project leader, was allowed by his employer to keep the results as his own product. It is now being sold as a high-level programming productivity tool called Autoprograms. World rights to the product have been picked up by British software house ADM, formerly known as Allan d'Morias.

It is being sold to IBM installations running DOS, OS, and MVS, although according to ADM it has the capability of running on almost any machine.

"This product can do so much more than existing tools we believe that installations will come round to buying it even if they have already bought something else," said Ron Hunnibal, marketing and sales manager for ADM.

Hunnibal sees Autoprograms as having a place alongside productivity aids such as Easytrieve, Mark IV, Ramis, and others, particularly those which address a specific area rather than the wide range aimed at by Autoprograms.

The product is designed to help with the development of everyday operational applications in both traditional and unusual DP areas. Such programs are the opposite of "one-off, quick and dirty" jobs — they have to be written with an eye to maintenance in the long term, as well as machine performance. ADM's term for these bread-and-butter applications is "production programs".

Autoprograms is a high-level tool which uses macros and tables to produce code which is then assembled. This gives the user access to the speed and efficiency of Assembler but at a high level which does not involve difficult maintenance, usually the dark side of Assembler's flexibility.

It is a programmer's tool, and not an end-user's friendly do-it-yourself computing kit, but it has spin-offs for the end-user in large organisations because it speeds up DP jobs.

For example, a report program can be written in a few lines, with complex headings taken from a table, a useful feature which has found favour with multinational concerns which need different languages on reports. The example shown in Figure 1 is the Autoprograms version of an uncommented Cobol program of 140 lines or so, with a short explanation of what each Autoprograms line is doing.

"We're not saying that it is suitable for all programs," said ADM consultant Frances Moseley, who trained to use Autoprograms in a couple of days. "It doesn't save a lot of effort on editing and validation programs but it has a role to play in about 80% of programs.

"It demands programming skill, but programmers like it because it doesn't talk down to them: it's not verbose and it needs a bit of intelligence to use it," she added.

The source code can be supplied and ADM is quite content to let licensed users adapt the product to their specific purposes. In fact Autoprograms is designed to easily allow changes, so it can be used with any library, database, or file structure. Automatic system checks and default formats mean that the product can be as simple, or as sophisticated, as the user wants it to be.

"It's a matter of trying to cut down on the total time the job takes," said Hunnibal. "These are expensive guys. Why pay contract programmers if you can maximise output more cheaply?"

Autoprograms sells at about £10,000-£12,000 outright, and ADM is appointing distributors for the product because the company sees support as vital.

ADM came across Autoprograms in the course of its consultancy work in a Paris firm. "We found it almost by accident," explained ADM director Ian Andrews. "It was a superb technical product with no sales and publicity — the author knew what was necessary in terms of support but didn't know what was needed on the marketing side.

"We were very sceptical at first, but after using it in-house we were convinced. This is a major commercial venture for us, and the interest and response we're getting proves there is a wide variety of installations interested in using it for higher productivity."

```
REPORTER
    INFILE=INFILE3,                                  * Input file, 3 lines heading
    TITLE=(16,"ACCOUNTS RECEIVABLE"),                * Report heading
    IN1=(CN0, CNM, INO, IDTE, AMT),                  * Fields defined
    OUT1=(2,11,34,43,55)                             * Positions to be printed
Date, time, installation name and page numbers, etc, appear automatically.
```

Figure 1: Sample Autoprograms report program.

SOFTWARE BRIEF[S]

Ace develop[s] Unix version of Lex WP

BRITISH software house [...] Microsystems has announced [...] it is adapting its Lex word proc[es]sing package for use with the [...] operating system.

Ace is joining the rush to [...] applications for Unix, which [...] though promising as a [...] operating system, still lacks [...]cations, and particularly in [...] view, "a decent word process[or]". The Unix version is already [run]ning in test sites and should [be] released in the spring.

Information key

A DATABASE information retrie[val] system using English langua[ge] commands has been produced b[y] Datapoint UK, formerly [...] Computers, a subsidiary of Data[point] Corp in the US. Designed [to] produce non-standard reports [at] short notice, Datascan co[sts] £2,500, and runs on Datapoint equipment with 64K or more memory.

Jacquard link

A LOW-COST workstation [can] be added to the standalone J[...] terminal or the J100 multi-ter[mi]nal system using a package fro[m] Diktat, distributors for AM Jac[quard] systems. Remote-Rite allows a daisy wheel printer wi[th] integral typewriter keyboard to [be] linked to an AM Jacquard wo[rd] and data processing installation.

Plant control

APPLICATIONS such as [re]source planning and process control for plant engineering [are] included in an integrated packag[e] from Riva Turnkey Compu[ter] Systems of Bolton. Called Pla[nt] Man, the system runs on Hewlett-Packard equipment and costs fro[m] £40,000.

Insurance aid

EXCLUSIVE distribution rights to the Series 9000 Insurance Agency Management system have been given to Lifeboat Associates of New York. Costing $950, the package is compatible with the CP/M operating system, and allows users to code up to 999 types of insurance coverage. Also newly available from Lifeboat Associates is an updated version of Lisp, the symbol manipulation language, which with tongue in cheek it has called Stiff Upper Lisp.

Making TRACS

A SYSTEM called TRACS which simplified the programming needed to transmit batch data between computers and teleprocessing devices has been released by Software Module Marketing of Beckenham. The Remote Access Control System supports anything from point of sale cash registers to large IBM kit via standard teleprocessing connections.

Sales drive

A MAJOR sales drive into the builders' merchants industry is being launched by Semaphore Computer Systems, computer suppliers based in Godalming, Surrey. The objective is to market the package it developed for Woodrows Builders Merchants of Salisbury, which it claims sells for £6,000 less than those of competitors, but SCS also intends to set up a computer association for the builders' merchants trade.

Grain trade

OATS, an integrated financial system for grain traders, has been launched by Alpha Microsystems, the 16-bit micro systems company. Complete system software and hardware costs from £18,000, and is also being marketed by Alpha Micro (East Anglia), a subsidiary of Alpha Microsystems.

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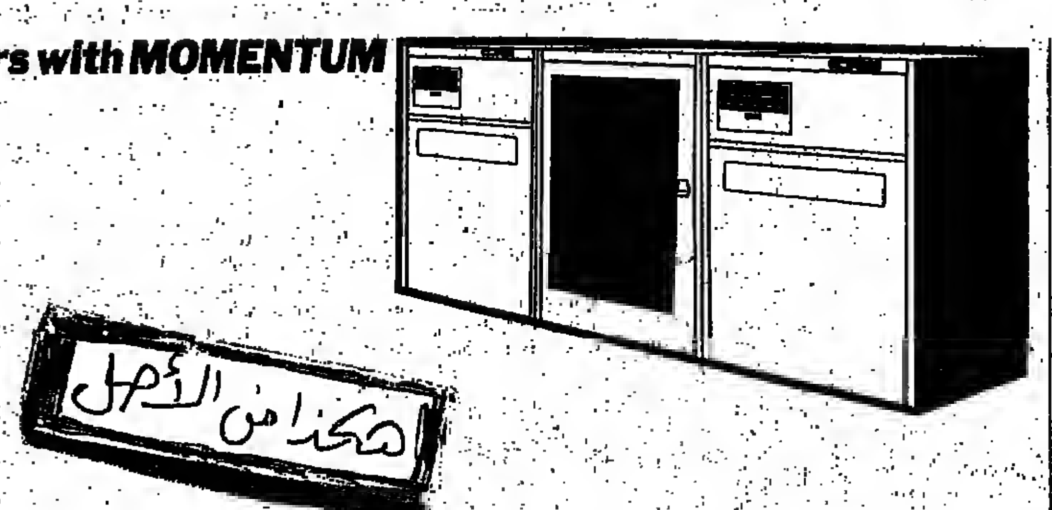

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Honeywell, NCR, follow IBM with profits slump— but Burroughs recovers

THE season of American annual reports is with us – and gloomy reading they make.

Following IBM, which reported 1981 profits 7% down last week, Honeywell and NCR have both come in with profit falls and Burroughs, while reporting its first quarterly improvement in profits for 18 months, still showed a final figure lower than 1980.

IBM ended the year with turnover up $2.85 billion at $29.07 billion, but profits fell 7% to $3.3 billion and overseas sales were up just $200 million, according to chairman John Opel.

Despite the drop in earnings, New York-based IBM watchers were almost unanimously optimistic about the prospects for IBM in the coming year. Tom Crotty, of the Gartner group, said he expected a 30% increase in earnings.

No American analyst contacted knew whether IBM has used the $5 billion lines of credit (loan facilities) which the company showed in its accounts last year, though Crotty did refer to the early retirement plan which IBM had introduced as a positive indicator of reduced costs.

The best of the rest is undoubtedly Burroughs, where chairman Michael Blumenthal delivered results which seem to show that the company is back on a recovery track, with profits well up on last year's $82 million, at $148.9 million.

This is just halfway back to the 1980 profit of $305 million and does not reflect the impact of the Memorex merger which was legally completed recently.

Memorex was still making a loss as the final stages of the merger were being completed just before Christmas, but optimistic noises about reaching break-even were being made last autumn.

The Memorex figures were included in Burroughs results for December and were described as "not meaningful."

Burroughs expects further improvement at the company in 1982 and will be making a series of planned new product releases in 1982.

American analysts were sceptical about the strains the merger would impose on Burroughs, particularly at a time when Burroughs was itself in the process of major reorganisation.

There was little shareholder resistance to the merger, which will probably make Burroughs the second biggest computer company after IBM by the end of next year.

Honeywell, not unexpectedly, turned in profits £39.6 million down on last year's $288.9 million, at $259.3 million.

Edson Spencer, the Honeywell chairman and chief executive, blamed the fall mainly on the French company CII-Honeywell Bull in which the US company has a 47% stake.

Spencer said that the French company caused Honeywell a 61 cents per share loss compared with a $1.45 contribution in 1980.

Spencer attributed the poor overseas results and particularly those at CII-Honeywell Bull to the threat of nationalisation posed by the Mitterrand government in France.

He said it now seemed likely that Honeywell would reduce its ownership in CII-HB from 47% to 19% or less.

Honeywell, which reported sales for the whole of the company – including Honeywell Controls – at $5.3 billion compared with $4.9 billion in 1980, showed Computer Division (Honeywell Information Systems) sales slightly up, from 1980's $1.6 billion, to $1.77 billion.

Spencer said Information Systems had posted a sharp increase in orders in the fourth quarter and that 1981 orders for both large and small systems showed a substantial increase over 1980. The biggest increase came in the US, with foreign orders almost static.

Honeywell intends to increase its research and development expenditure by $30 million to $720 million in 1982, according to Spencer.

Spencer forecasts a modest profit increase in 1982.

NCR, with much of its operations concentrated in Europe, reported a small increase in sales, from a 1981 total of $3.3 billion, to $3.4 billion in 1981.

Profits were badly hit by the recession in Europe and by the strong dollar, according to NCR chairman William Anderson.

Profits fell by 18% from $254.7 million in 1980 to $208.2 million for 1981.

NCR was affected in much the same way as all other US companies by the fall in European currencies in relation to the dollar, according to president Bill Anderson, and by the accounting methods used to translate the foreign currency operations into American dollars.

However, the currency movements should not conceal the fact that most of the American companies are having a poor time in Europe and are simultaneously finding inflation and high interest rates in America hard to beat.

With American inflation at about 11% IBM's increased sales turnover, which was almost the same as NCR's entire turnover, merely enabled the company to stand still in real terms.

All the companies have so far reported a much improved sales intake for the final quarter of 1981.

BLUMENTHAL . . . Burroughs back on recovery track.

SPENCER . . . Blames Honeywell profit drop on French.

US semiconductor industry gloom as Japanese ride high

REELING from reports that the Japanese have captured over 70% of the 64K RAM market, American semiconductor manufacturers have closed a year in which few if any of them made a profit.

The sudden drops in profits at Intel (down 72%) and Advanced Micro Devices (down 70%) comes as a shock to companies which have been used to 25% annual growth, apart from the bad years of 1975/76.

According to the American Semiconductor Association the value of order deliveries in 1981 was $800 million down at $9.2 billion compared with $10 billion in 1980.

The drop in unit sales value of up to 50% in the year was compounded by a 10 to 15% decline in order volume. At the moment few US companies are predicting any upturn in orders much before the third or fourth quarter of the current year.

Even these predictions now look suspect. Japanese companies like ICL's partner Fujitsu, NAS supplier Hitachi and Nippon Electric have all continued to make massive investment in new chip production facilities.

NEC recently announced plans to open a new factory near Tokyo later this year which would add a one million chips per month capacity to their existing 300,000 unit production.

Oki, not much known outside Japan except for printers, is reckoned to be producing about half a million 64K chips a month at its Kyshu factory.

With 70% of the 64K market in the bag, the Japanese are riding on the back of buoyant demand in the Far East for memory devices, principally for use in consumer goods.

This has guaranteed that they will be calling the opening shots in the next round of the chip war.

The 256K chip has never been much more than a designer's dream in America where Intel was the first to announce a design.

Priced provisionally at £20 to £30, these new chips will probably sink any form of recovery in demand in America and further erode the already weak price base for the 16K and 64K chips.

Jerry Sanders, president of Advanced Micro Devices, recently said that the Japanese could have as much as they liked of the 64K market. "They (the Japanese) have irrevocably changed the memory business," he said.

But while there is an acute shortage of Japanese 64K RAMs on the American market, there was no sign of any price increase.

There can only be one explanation for this situation, according to US observers.

Oki and Hitachi have both formally announced plans for the delivery of production samples of 256K RAMs and ROMs later this year. Oki has been supplying internal divisions of its own company with production prototype 256K RAMs since last November.

NEC began sample deliveries to several customers even earlier, possibly last September.

Fujitsu has not as yet made a public announcement, but Shin Yoshigawa, international marketing director, said the company had a 256K RAM, but the details were secret.

All this adds up to a massive invasion of Japanese 256K chips early in 1983, with enough samples on the market by the end of 1982 to further erode the volume and value of 16K and 64K chips.

CW SHARES TABLE

Date 21/1/82 — Index 81.61 — Change [illegible]

London Stock Exchange 1982 High (Pence)	Low	Stock	Price	Change
163	161	A Comp Tech (11p)	161	
152	150	BOC Int (12½p)	150	2
73	71	[illegible]	71	
103	101	Chubb (20p)	103	
65	48	Cole (R H) (25p)	65	+1
230	220	Comp & Sys (20p)	222	
[illegible]	[illegible]	De La Rue (1p)	[illegible]	+67
238	238	Estal (25p)	238	+3
664	626	Ferranti (50p)	656	+15
829	803	GEC (15p)	829	+27
37	33	ICL (25p)	31	+6
41	41	Kalamazoo (10p)	41	
290	272	Koda Int (75p)	290	1
220	218	Mamec (10p)	218	
115	110	Muirhead (25p)	115	
279	262	[illegible]	262	
C38½	C37½	Norsk Data	138½	+12½
290	290	Office & Elect (25p)	290	
467	445	Philips Lamp (F10)	467	+21
363	348	Plessey (50p)	360	+11
80	88	Quest Auto (10p)	88	
430	384	Racal Elect (25p)	388	+25
178	171	Rediffusion (25p)	178	+7
458	431	Thorn-EMI (25p)	443	+12
90	88	Unit CAT (50p)	90	+4
		OTHER MARKETS*		
96	90	Bus Comp (10p)	97	
667	651	Comp Serv I (£1)	651	1
83	78	Cornish (C&H) (20p)	83	
134	133	HMW (£1)	133	6
66	63	Rolfe & Nolan (10p)	63	
105	78	ScanData (20p)	78	
190	190	Star Comp (10p)	190	2
105	105	Tinders Comp (10p)	105	
92	88	Zygal Dyn (5p)	92	+4
		US Stocks		
29½	26½	Amdahl	29½	

US Stock 1982 High ($)	Low	Stock	Price	Change
[illegible]	[illegible]	Apple	[illegible]	[illegible]
[illegible]	[illegible]	Auto Data Pro	[illegible]	[illegible]
[illegible]	[illegible]	Burroughs	[illegible]	[illegible]
[illegible]	[illegible]	Commodore	[illegible]	[illegible]
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34	[illegible]	Wang Lab B	[illegible]	[illegible]
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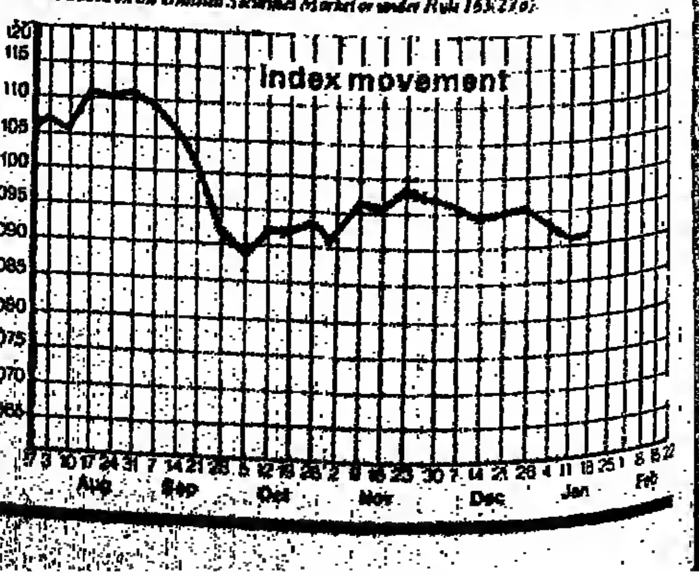
Table shows the closing prices of The London Stock Exchange on Thursday and in America Wednesday. The share index is based on the prices of the UK companies in the table. High and Lows have been adjusted where necessary.
** Shares traded on the Unlisted Securities Market or under Rule 163(2)(a).*



Top Italian semi manufacturer plans to double turnover

by Boris Sedseca

ITALY'S major semiconductor manufacturer SGS-ATES plans to double its turnover during the next three years to reach $600 million in 1985. In turn, it expects its exports to increase from 70% to 80% of sales, of which 30% will go to the US and 50% to Europe.

Piero Martinotti, corporate vice-president and director of the MOS division, claims that half of the company's turnover in MOS components has been ploughed back into capital investments over the last few years.

This will enable the company to increase its MOS sales from $20 million in 1980 to between $150 and $200 million in 1986.

SGS-ATES is wholly owned by the Italian electronics and telecommunications STET group, which is part of the State-controlled IRI group, but the company wants its future sources of finance to come from three areas: a restructuring of the company's equity capital to reduce its reliance on the Italian government, borrowings from the money market, and profits.

"A fourth source potentially is an offer of equity to shareholders. SGS is currently undergoing a process of privatisation," said Martinotti.

The company was formed in 1972 by the merger of SGS, then wholly owned by Olivetti, and ATES, wholly owned by STET.

STET held 60% in the new company while Olivetti and Fiat each held 20%, but by 1977 STET assumed total ownership.

Olivetti is still a major customer for SGS-ATES, mainly for microprocessor products for use in Olivetti's peripherals, printers and electronic typewriters. SGS-ATES second sources Zilog's Z8, Z80 and Z8000 products.

According to Pierantino Palerma, NMOS product manager, the reason SGS-ATES has chosen the Zilog Z8000 design for 16-bit microprocessors is that it is based on an existing four-micron gate-length technology, whereas the Motorola 68000, for example, is based on a more advanced 2.5 micron technology for which a second source supplier is not currently available for volume production.

Palerma said: "Most 2.5 micron technology is at present only in the research and development stage, if one takes full-production volumes to mean at least 70,000 wafers a year.

"Up to now we have had a policy of second sourcing most of our designs to bring in volume production, but we are gradually moving into design, particularly in the case of peripherals."

PALERMA . . . "moving into design."

UK must catch up with Japan in complex chips, says research physicist

by Donald Kennett

BRITAIN and the West can catch up with the Japanese on ULSI, the next step in electronics miniaturisation, if we take what they are doing seriously and follow their direction.

This is the view of theoretical physicist John Barker of Warwick University, who leads a team of four people trying to anticipate problems of building ULSI (ultra large scale integration) circuits with between 10 million and 100 million gates. Barker's work is taking place at Warwick as part of the university's research programme.

Backing for related work has recently been announced by the Science and Engineering Research Council, which has set up a committee to help win grants for projects working on the application of molecular insulating films.

While the Japanese are putting considerable sums into a co-ordinated national effort to develop a completely different approach to information handling, UK companies are happy to catch up with 1978 levels of capability, according to Barker.

But many of the ideas on new materials and logic structures which will make very complex designs workable have come from the UK, he says. Europe and the US have the capacity to stop the Japanese in their tracks, but mathematical and other scientific breakthroughs are still needed to overcome the basic problems involved.

The problems centre on the vulnerability of high-density circuits to damage, both in the production process itself and in use, and secondarily in testing them adequately to make sure they work as they should, with higher output yields.

In the UK, British Telecom and Plessey have been the only commercial organisations to show any interest in highly complex devices, he says.

But next month Warwick University opens its Science Park, which is designed to bring commercial activity closer to the academic resources it may be able to benefit from. Barker hopes to set up some kind of semi-commercial project there.

In March, a Nato-sponsored gathering in Grenoble in France will bring together 60 experts from different fields related to the work, including chemists and biologists for the materials aspects, as well as electronics and software engineers, artificial intelligence workers and mathematicians.

Their goals will be to understand something of each other's fields, and then to discuss how best to advise the various national funding agencies.

Copyphone's Data Commander

Mobile terminal can drive forklift trucks

by Donald Kennett

YOU don't have to have a robot driving your forklift truck to put it under the control of a computer – just give the driver one of the Data Commander mobile communications terminals developed by Camberley-based communications systems designer Copyphone.

Copyphone's history is rooted in the telemetry and facsimile transmission fields and one of its favourite early projects was a system which enabled a Fleet Street newspaper to be printed on Cunard liners at sea.

The mobile terminals were developed for a distributed warehousing operation. Orders taken at head office are keyed into a computer, which runs credit rating checks on the customers before checking the files of where stocks are held and transmitting picking instructions to a forklift driver in the appropriate warehouse over telephone lines and a radio link to his mobile terminal.

The terminal has a 32-character strip display and a 53-key keyboard, but the main method of getting feedback from the warehouse shelves, the marshalling area or the despatch bay, is by reading bar codes off the packaging and the location marker with a light-pen.

The computer can then adjust stock records, raise delivery notes and send off invoices.

A portable version of the terminal, with a shoulder strap, is available for users such as supermarkets and component distributors.

More from your micro

A GROWING number of micro users want to access established mini- and mainframe-based systems from their machines. They want to share or distribute data, or simply save money and space by having their micros double up as terminals.

Methods for setting up the link start with a simple modem or direct wire link, with the data on the link coming directly from the keyboard or being sent directly to the screen.

But beyond that, the mainframe may make use of control characters that are not available from the micro's keyboard. And beyond that still, the mainframe may have tedious logging-on procedures that the micro could usefully help with.

One of the proliferating facilities designed to deal with these problems is the Terminal program from Tamworth-based software house MTW Computer Services.

Its first versions, costing £45 and £55, are for the Tandy TRS80 Models I, II and III. These run under Tandy's DOS floppy disc based operating system, but other versions are under development for CP/M based systems.

The program is menu-driven and its facilities include software-selectable data rates from 110 to 9,600 bits per second and translation tables for ICL, IBM and Univac character and control codes. Character codes from five to eight bits are supported and parity, echo and error checking options are available.

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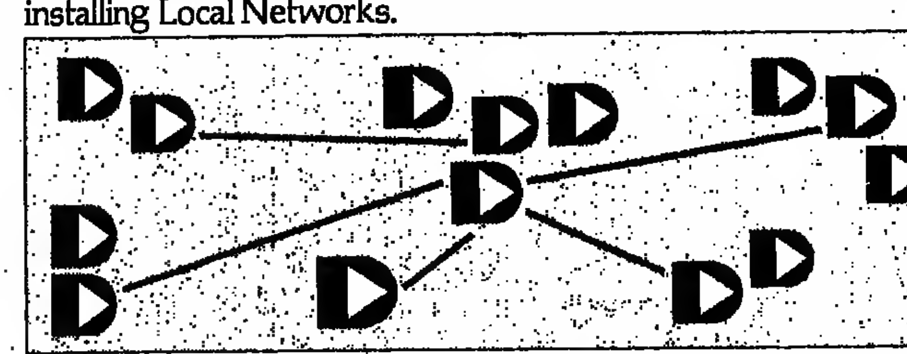

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LEGAL OPINION

Lesson of Exxon copyright case for computer programs

Bryan Niblett is a barrister and computer scientist specialising in the legal problems associated with computers.

IN an article on software protection (CW, December 3, 1981) Nicholas Bohm considered copyright protection of computer programs in the light of a decision of the Court of Appeal in June last year, in an action brought by Exxon.

Bohm concludes that the case deals a heavy blow to any claim that computer programs can obtain copyright protection as literary works. But I think this is far too sweeping a statement. For the vast majority of computer programs the Exxon case will affect their protection not at all.

What the case does confirm is the (not surprising) expectation that copyright protection will not be enjoyed by that unusual class of programs which consist of no more than a single invented work.

The Exxon case goes to the root of the subsistence of copyright in a literary work, so it is worth considering the judgment in some detail. Exxon claimed copyright in the single word "Exxon," an invented word which forms part of its corporate name and the names of associated and subsidiary companies.

Copyright had never before been claimed in a single word, and the claim was rejected by the Chancery judge who heard the case at first instance. This particular Chancery judge has a well-developed sense of humour and he added the comment that he supposed the extra "x" in Exxon was added to avoid the risk of involving the Bishop of Exeter in proceedings for infringement every time he wrote to The Times!

The Copyright Act 1956 provides that, subject to certain conditions, copyright shall subsist in every original literary work. So the question for the Court of Appeal was: Is the character string "Exxon" an original literary work within the meaning of the Act?

Counsel for Exxon was able to show that the word was certainly *original*, since it was invented after much research and testing: it was certainly *literary* in the sense that it consisted of a string of letters; and it was certainly a *work*, in that the exercise of much effort and skill had gone into its invention.

Nonetheless, the three judges of the Court of Appeal decided unanimously that "Exxon" does not qualify as an "original literary work" within the meaning of that phrase.

In reaching this decision the Court of Appeal cited a copyright case, Hollinrake v. Truswell, decided in 1894 under the Copyright Act 1842. The work there considered was a dressmaker's cardboard pattern on which was printed a few descriptive words.

Under the 1842 Act the court had to decide whether copyright subsisted in the cardboard pattern as a "book", that is a map, chart or plan within Section 2 of that Act.

In deciding that copyright did not subsist in the work Lord Justice Davey mentioned that the 1842 Act was concerned by its preamble to protect literary works of lasting benefit to the world. He defined a literary work as one "intended to afford either information and instruction, or pleasure, in the form of literary enjoyment."

It is these words, cited by the Court of Appeal in the Exxon case, which led Nicholas Bohm to suppose that copyright will be denied computer programs as literary works.

It is always dangerous to apply cases decided under old Acts to modern circumstances. The Copyright Act 1911 and the Copyright Act 1956 (the one presently in force) have greatly extended the range of literary works as protected by the 1842 Act.

It is clear from a detailed reading of the Hollinrake case that a major consideration in denying copyright protection to the cardboard pattern was that it was an instrument or tool which might be the subject of a patent claim. As we know, the Patents Act 1977 provides that a computer program in its literary form cannot be the subject matter of a patent claim.

The Exxon case must therefore be limited to its own facts and tells us only that copyright protection is not available for a single invented word. This conclusion is emphasised by another copyright case, also cited in the Exxon judgment, which established that copyright *does* subsist in a *list* of invented words devised for use as telegraphic codes.

Thus the lesson of the Exxon case for computer programs is simply that a program consisting of no more than one word, a macro statement for example, or a subroutine name, will not be protected. The Exxon case does not mean that the normal computer program, a juxtaposition of many strings of symbols, will not enjoy copyright protection.

Nevertheless, as Nicholas Bohm vigorously argues, it is urgent for the government to take the necessary action to ensure without doubt that computer programs are literary works for copyright purposes. The Whitford Committee recommended this in March 1977, and the Green Paper of July 1981 accepts the same principle.

If the government is serious in its wish to help the computer industry it should legislate without delay. There can be no better time than Information Technology Year.

Bryan Niblett

GILB'S MYTHODOLOGY

What's the cheapest way of cleaning up my system?

Tom Gilb is an independent consultant, lecturer and author on software engineering topics.

The Sixth Law of Reliability: The error-detection and correction capabilities of any system will serve as the key to understanding the kind of error it cannot handle.

AS with the fifth law, this one is intended to serve as a warning to be careful about drawing wrong conclusions when you are confronted with impressive features of a hardware or software product.

For example, when the salesman tells you that your pocket computer was tested so thoroughly on the multiply instruction alone that unique test cases were run for 24 hours continuously, then you might like to remind him that a 100% test of every possible case of A and B would require at least thirty thousand years of computer time.

So by his own measure he is telling you that only fewer than one in eleven million possible cases of input data have been tested. The multiply firmware is 99.99999% untested, you can remind the proud salesman.

On a more practical plane, I can never forget the Cobol accounting system which produced incorrect results owing to a mystical inability of the large-scale computer to multiply −0 x. −0.

Say the salesman tells you that the entire system was developed using the powerful "inspection" method, which has demonstrated that it can produce near zero-defect software when properly applied. In this case you can remind the salesman that inspection of all kinds, including software inspection, is only about 80% effective at catching available errors. Only repeated early use of this method gives us a relatively high error catch. There are still plenty of errors there; only the mean time between them is lengthened.

Then the salesman tells you that the system has been tested, and you can retest it using the most thorough test sets ever made. Your can first remind him that conventional program testing at its best has only about a 30% effectiveness in catching errors in practice.

I realise that this number will come as a shock to the many professionals who do not adequately measure the relationship between test errors and field errors, the way IBM for example does. But there is no reason to be impressed by any amount of testing.

Then the salesman tells you that he has an automatic test path analyser program which will help you map out any unexercised logical path in your program. This might in fact be of a limited interest if you apply it to small modules of the structured (forward flow only) variety. If you try anything else, your giant scale machine might happily churn on for years in analyse all possible cases. In one example a 21-statement unstructured program had over 93 thousand million unique test paths.

Then the salesman tells you that there is a new version of the Taodem dual computer principle which is standard in his system. The programs are functionally duplicated, but they are written in independent structures, languages and by different teams. So you have "operational testing." Each real live case of input is effectively evaluated by two independent programs with (hopefully) different bugs. Only when they agree will an automatic update be allowed.

Now I would be the first to agree that this represents an improvement over the more primitive concept of trying to test all possible cases in advance of operation. In fact, it is amazing that anybody believes that they can do this (advance testing) at all in real life.

But strong as this "operational testing" concept is, it is not perfect. It will not catch errors which are equal in both versions of the program. Such errors could be the result of unclear or incomplete program logic design specifications.

The design specifications can also be done independently to detect this problem. But it will still not solve the problem entirely.

So for *any* error-defence mechanism, you can always find the errors which it will not catch. It does not mean that we can not fully reject all "imperfect" solutions to the error-catching problem. There are, at present, known perfect solutions to it.

The question is: What is the cheapest set of error-fighting techniques to get my system to a level that my users really need considering the cost of error?

But, when the salesman is deluding the idea salesmen at a conference, teaching the correct writing in a technical publication — makes sweeping claims for his favourite error-fighting mechanism, then you should ask that expert to make a list of all the error types which cannot be caught by it.

If the salesman has no answer then he does not understand the limitations of the product he knows. And if you intend to consider the product in spite of *this* warning flag, then you had better start making a list of the error types which will not be caught by it, so you can find additional techniques elsewhere.

Tom Gilb

FOCUS

Standard approach

BELATEDLY, the computer industry is having its attention directed towards the establishment of standards.

At the same time that the president of the British Standards Institute was calling for urgent national priority to be given to establishing and maintaining proper standards for computing, the standardisation officer of the National Computing Centre is embarking on a campaign to promote greater awareness of standards in business and computing.

The government is also keen to see good standards established, though a little standardisation on its own part would not come amiss. Both the Department of Industry and the Department of Education are involved in undertaking standardisation projects for the computer industry.

The NCC has been asked by the Education Ministry to undertake a substantial project on the subject of standards of educational computing.

Equally substantial is the Department of Industry committee on Information Technology standards which is urgently seeking views from industry on the priority levels of IT standardisation.

For the DPM, the knowledge that so much activity is taking place on his behalf in the troublesome area of standards is a relief, mainly on the grounds that it is always preferable to let others get involved. It is also a setback since, almost inevitably, the profusion of bodies and committees will result in non-action.

In the meantime, the DPM has some standards problems of his own. Should he allow operators to wear sneakers and jeans in the computer centre or should they be asked to conform to normal installation dress standards? Similarly, should a flexible standard policy apply in respect of operational logs compared to normal levels of installation documentation standards?

Outside the computer installation, meanwhile, all are agreed that standards are to be encouraged whenever time and procedures permit. Representatives from industry spend considerable time co-ordinating policies and bridging technology gaps.

Unfortunately, there is no standard approach, with the ISO endeavouring to set national standards while the various technical committees of the BCS, IDPM, NCC and CSA are busy structuring computing standards, with the CSA seemingly closest to setting a practical policy in such areas as Prestel.

On a broader front, the sooner all computer systems conform or convert to IBM technology interface standards the better.

Being able to shop around for software packages, peripherals and staff, all totally compatible with the computer system, would be an undisguised blessing.

Alan Simpson

DOWNTIME

Odds on the weather

I OFTEN wonder why the Met Office does not issue its weather forecasts as tables of probabilities — because then it would never be wrong. When a Test match was washed out, it would say smugly that this had been included among its predictions.

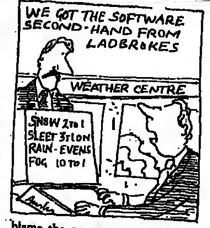
There would no longer be any need for statements such as: "We do not expect an imminent return of the cold weather, but with the Continental high in such close proximity, the possibility exists." They would be able to say instead: "There is a 10 per cent chance it will snow tomorrow."

It would give new meaning to sheltering under the umbrella of probability which, as we all know, is a safer bet than a tree during a thunderstorm.

There would be no more need to blame the computer when things go wrong.

But I must be fair to the Met Office. When one of our less reliable national dailies recently quoted the Met Office as blaming the unexpected return of snow on computer error, I swooped in to investigate, and asked a spokesman if the report was true.

"None at all, absolute nonsense," was the tart reply. "The computer had nothing to do with it."



Art of communication

REGULARS of this column will know that I love a bit of gobbledegook from time to time. There is nothing so boring as line after line of tight terse prose.

So it was a rare treat to find an entire piece of prose written in glorious gibberish, as was a recent advertisement in the American Telecommunications Magazine. It begins "Since nearly 20 years, Thomson-CSF takes part in the space telecommunications development."

The ad simmers down for a while. But fear not, for it finishes with a flourish: "With more than 2,000 technicians directly involved in this field of activity, Thomson-CSF disposes of the most important specialized team in Europe."

Chad is deeply concerned about the safety and wellbeing of some of Thomson's employees.

Core, what a dump!

I WITNESSED a most heinous crime against a computer some years ago at an office party. Until now I have kept quiet about this traumatic experience.

It was one of those parties where everyone became rapidly inebriated and started throwing egg on each other's faces. This went very well until someone suggested tossing the remains of a punch bowl into the core of the resident IBM 370.

Everyone seemed to think it was a jolly good wheeze, and the suggestion was implemented with a vengeance. But in a way that is proof that real life is stranger than fiction.

Several of the befuddled company were doubled up over the machine core dumping the unacceptable consequences of their excess.

New Chinese proverb

THE resurgence of interest in machine language translation has brought some crazy misunderstandings in its wake.

The difficulty machine translators have in coping with the richness of our language, and with images and metaphors are well known. An oft quoted example is the English proverb, "Out of sight, out of mind." Translated by machine from English into Russian and back into English it ended up, "Invisible idiot."

How it read in Russian is, unfortunately, lost to posterity.

A more recent example is the simple sentence: "A minute is the office can seem like an hour," which was translated into Chinese and back again by a system designed for handling technical documents. Back came the response: "A minute is a long time in office politics."

Chad

10 YEARS AGO

From Computer Weekly of January 27, 1972

AT Honeywell factories in Scotland, 370 jobs were at risk and EAL was to lay off 60 staff and stop the production of its DCT 132 terminal . . . The Health Service in England spent an estimated £5.2 million on computers in the 1971-72 financial year, and in 1971 government departments were using 199 computers worth £37.5 million. Thirty-three more were on order at a cost of £11 million . . . IBM's language PL/I was in demand, and though Burroughs was the only other major supplier with a compiler, other companies including ICL were working on it.

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Tbursday, January 28, 1982

BT's answer to competition

AS Sir Keith Joseph predicted, the freedom of private enterprise to challenge British Telecom is having just as much effect on the corporation's behaviour as it is on potential competitors.

In setting up BT Gold to run its Dialcom electronic mail service, British Telecom has proved the former Industry Secretary right in his arguments that it would learn new methods of supplying the market if forced to. In the curiously-labelled Gold, the corporation is experimenting with the first of a series of alternative structures it will have to master if it is to match customer demands that are expected to increase in size and complexity at an alarming rate over the next few years.

An example which has been experimental in itself is Prestel. Although separately run, its staff have been moved in from, and later back out to, other departments. The result has, arguably, been that it has suffered from being just another stop on some people's career paths, almost unrelated to many of the other things they have been doing.

It has been suggested that Prestel is a suitable case for treatment, that it should be sold off or in some other way separated from the rest of BT.

But Prestel has behaved somewhat unpredictably in the market. It has had to go through one or two drastic changes and may have to go through some more before its future becomes clear.

In any case, Preatel is a collaborative venture with the electronics and publishing industries, which has relied heavily on Britisb Telecom's backing for its credibility. Only when those other two industries start earning profits from their involvement will Prestel be worth spinning off.

By then, however, it may be operating as a network of centres showing few administrative or technical differences from telephone exchanges, with most of its earnings potential firmly implanted in outside organisations, and so be ineligible for separation.

For now Prestel is too surrounded by uncertainties to give reliable results from an experiment in organisational structure. Dialcom, though a US service new to this country, can (and should be able to continue to) provide the right reference model.

A hollow gesture

ANOTHER new year has come and gone and still the government is promising action on data protection legislation "soon." A White Paper is to be produced during this parliamentary session, but as usual no definite date can be extracted from the Home Office.

The deadline set by the Council of Europe for Britain to introduce data protection legislation is the end of this year, after which sanctions have been threatened. These are likely to take the form of a stoppage of data flow to and from the UK: a type of computer excommunication.

Michael Meacher, Labour MP for Oldham and ex-Parliamentary Under Secretary of State for Trade, has won a first reading for a bill on data protection, but it is no more than a hollow gesture for a measure unlikely to reach the statute book. The person who should have introduced the bill is William Whitelaw, the Home Secretary.

It is he who is urging the police to make greater use of computers to solve serious crime, and helping to pin the blame for the delay in catching the Yorkshire Ripper on the lack of suitable technology. Little mention is made of the police computer projects already in hand which cannot go ahead until the government provides the guidelines and safeguards within which they can operate.

It is now too late for Britain to demonstrate any kind of initiative on data protection in Europe, where the majority of countries have already taken action. All that is left for this country is to follow reluctantly along in their wake. We seem to be making a bad-tempered and wholly unnecessary fuss over doing even that.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by Mr R. Grinstead, of Hitchin, Herts, who wins £5.

"When I saw them, they sang a duet, but when Dennis told off the computer for getting something wrong, the computer started crying," she said.

Hitchen Express

LETTERS

VME/B has its champions, too

I WAS dismayed to find a large number of inaccuracies in the article on VME/B (CW, January 14).

I was employed by ICL for a number of years and was involved in installing a George 3 replacement VME/B system. I am currently working for a VME-B user.

"Calls to ICL's help-line from George 3 users were the exception." They were not exceptional, it all depended upon the quality of the systems programming team at the installation as to how much or little support was required.

I find it hard to believe that the author of this article has ever read an ICL 2900 Cobol manual if he feels that the last place to go with a Cobol problem is the manual. Compared to the 1900 series manuals the 2900 manuals are positively brilliant.

The two George 3 manuals are mentioned in the article as being the fount of all knowledge. This is perfectly true, however the article does not mention the plethora of software/user notices that had to be consulted as well (about 2 volumes — unindexed).

No large operating system is "easy" to use. Surely, no one who knows anything at all about computing would pretend that a system such as OS/VS, George 3, or VME/B is so simple in its structure, facilities and command language that it is suitable for small children and trained chimpanzees, would they?

The performance of VME/B at release 6.11 is not unimpressive. Performance is not a problem now, though I would agree that in the past it has been.

If I could now turn to the basic untruths:

It is not true that the DME emulator was slugged to slow it down.

It is not true to say that it involves more effort to accomplish a task under VME/B than under George 3.

Has Mr Thomas ever done any *real* work?

As a non-systems programmer, I and my colleagues would totally refute the idea that only systems programmers like VME/B.

PHIL ROGERS

Dorchester, Dorset.

IT would appear from Andrew Thomas' article Why operators Fell in Love with George 3 (CW January 14) that his time spent working on a 2900 site did not teach him a great deal about 2900 SCL or about the people who support VME/B.

In his extremely biased, pro-George 3 article, he quotes an example of how to create a file under VME/B. This example contains so many mistakes as to make it laughable. One trusts that they are genuine mistakes, and not an attempt to mislead readers who may not be familiar with SCL.

In order to set the record straight, the correct method of setting up a VME/B file containing the word "ashurbaoipal" is as follows:

```
BEGIN
INPUT (,,libraryname.AFILE)
ASHURBANIPAL
****
END
```

The BEGIN and END are not absolutely essential, thus making the number of statements for this operation exactly the same as those for 1900.

In Mr Thomas' example, he would end up with two temporary files called AFILE, one of them having the description of a library (the PLACEFILE). The INF would fail altogether because the first parameter was not supplied to the macro call. (However, INF has been withdrawn by ICL because its effect can be achieved by using other macros.)

F. D. EASTWOOD

Chief Technical Support Officer

A Local Government 2900 Site

MAY I point out a few major errors in the description of the comparison between George 3 and VME/B.

● "From the operations viewpoint, of what value is an operating system which cannot tell you which jobs are currently running?"

This is rubbish. VME/B has showo operators and users what jobs are running, using the same command, from the very early days of VME/B. Any other details about jobs running, such as statistics, are available but must be interrogated by user written procedures.

● "Users familiar with the informative plain English error messages of George were now confronted with messages such as ERROR 576886 . . ."

Once again this is rubbish. Errors on VME/B are usually displayed by use of a 5, not 6-digit error code accompanied by an explanation of the error in question.

● "George 3 was written by a team of experts. VME/B suffered the 'Mongol horde' approach — hundreds of coders wrote a few lines each."

Rubbish again. There were a large number of system writers, grouped into teams, who wrote VME/B but they were not Mongols.

My case rests and hopefully you get my point: VME/B is not as bad as some people make it out to be!

BOB MEADOWS

London, SE6.

HMSO's achievement

THE altercation between Mr Tapper (CW, December 3) and Mr Walsh (CW, January 7, championing Professor Niblett, CW, November 19) on whether there was criticism of the HMSO databases of Statutes in Force should neither detract from the achievement of HMSO nor distract from the unsatisfactory state of the official electronic version.

Legal publishers normally achieve better than 99.99% textual accuracy, and the reported dozen errors in 750,000 characters is no more than might be expected from tapes produced as part of the computer typesetting process.

Of much greater importance for information retrieval purposes is the structure of such highly formal documents. This cannot be easily measured. Structure validation of the eight million characters of HMSO statutes held online on the Northumbrian Universities Multiple Access Computer suggest a consistency of about 95%.

This is quite remarkable considering that the earliest Act in the group still in force dates from 1267. There have been many different styles over the centuries.

Where the databases are inadequate is that they are wholly based on a logical arrangement for manual processing. This greatly reduces their value. HMSO are not responsible for policy but their diligence in producing the databases will be wasted if the system is not completely revised for the electronic medium. This requires something more than mere electronic capture at the Bill stage, although that would be sensible.

DR M. A. HEATHER

School of Law

Newcastle-upon-Tyne Polytechnic.

Info does not pretend

I REFER to an article entitled How to Identify the Real Relational Database Systems (CW, January 14) in which David Ferris has mistakenly referred to Info as a relational "pretender" for minis.

Firstly, Info does not "pretend" to be relational, it is relational according to Ferris' own description of what this means. The Info user has the ability to join any 10 "flat" files concurrently, either interactively or in programs, and can invoke or cancel the relationships at will. Even one-to-many and many-to-many relationships are supported interactively if desired.

Furthermore, there are no design limitations on file sizes and applications.

Secondly, IBM Info users are more than pleased with the flexibility the package provides. How could this be if Info is only for minis?

Lastly, Ferris' observation that many buyers today are also looking for a series of software development utilities to speed program implementation is certainly backed up by our experience.

However, we believe that the search is actually for an alternative data processing language which incorporates relational techniques, screen formatting, query facilities, data dictionary, report generators, and so on.

This more fundamental need is what Info addresses. The issue, after all, is productivity, not just Codd's definitions.

LARRY KURTZ

Director

Doric Computer Systems

Watford, Herts.

Strange coincidence

I SEE that the best score achieved on your quiz was 18 out of 20 — the same score, by a curious coincidence, as you yourselves achieved in the answers.

Question 16 — you say ABCDEFGHIJKLMNOPQRSTUVWXYZ is *not* a valid data name. A data name may be up to 30 characters long made up of the characters "A to "Z", "0" to "9", and "-". There must be at least one alpha character. Hyphen may not be the first or last character — therefore OVER-TIME- is the last invalid name.

Question 17 — a sign character is optional, therefore five is also a valid numeric literal.

The Editor welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address; not necessarily for publication. Letters may be cut.

Incidentally, speaking as one with systems programming experience in both George 3 and VME/B, I would say that George was far more fun to play with and things like DUMPER are a sad loss on it, which is a far less automatic system. Bring back George 3!

MIKE FLEMING

64 Cringlebrook,

Tamworth, Staffs.

● *Philip Hunter comments: I only managed 18 out of 20 when I gave the answers to the New Year Cobol quiz last week. This was a deliberate mistake — I wanted to make sure you really do know your standards! The answer to question 16 should have been C, and not B, as Mike Fleming points out. Questions 17 as set should have had two answers, A and C. It was intended to demonstrate that only numeric digits, preceded by plus or minus signs, are valid numeric literals in Cobol.*

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PROGRAMMERS PAGE — by Philip Hunter

How a Royal Hospital researcher caught the programming bug

I HAVE heard it said many times that scientists should stop rewriting the history books and leave programming to the programmers. The argument is that they take six months to turn out a bug-ridden version of what a skilled programmer could do in as many weeks.

Now I cannot go along with that argument, because it ignores the fact that some of the best programmers were once scientists, engineers, or medical researchers struggling to write a Mickey Mouse matrix inversion routine. Or some such phenomenon.

Many scientists have spent many fruitless hours gaping at a VDU screen. But I expect they once wasted an equal amount of time botching experiments in the school chemistry lab.

Someone who has entered programming through this back door is Sarah Wilson, research psychologist at the Royal Hospital and Home for Incurables. Her team has developed a microcomputer system with simple large keys to test the abilities of a wide variety of disabled people. It received one of five awards made through the International Year of Disabled People.

She, in common with some other doctors engaged in research, has caught the programming bug.

Some big microcomputer manufacturers believe that programs written by such people are susceptible to bugs. Whether this is a kind of perverse sales talk I do not know.

At a recent symposium on automated psychological testing held at the Royal Hospital in Putney, a salesman from Apple aired this view, but Wilson strongly defends the involvement of herself and others with computers on practical grounds.

"Funding is the big problem," she says. Small departments like hers cannot justify investment in full-time computer staff until they have a proven need. And such a need can only be proven by producing good working projects.

Besides, she adds, programming is stimulating. "Actually getting the machine going gives me great satisfaction."

Wilson also argues that her kind of work has special problems that require a continual close involvement with the design of the programs although it is her colleague Geoffrey Riley who does the bulk of the coding. "He's better at it," she insists.

This problem of communicating with someone who is not directly involved has often been cited as a good reason for making do without full-time computer professionals.

I use the word "professional" to emphasise what has been another difficulty. Programmers and analysts have suffered from a lack of credibility in the past, and their work has been thought of as something that anyone could do after a week's background reading.

Sarah Wilson clinching the International Year of Disabled People's award won by her department.

Such people will probably turn out inefficient programs, but nevertheless I feel Wilson is right. If at some time she employs professional programmers, she will at least be well aware what their up to, and be able to follow the progress of programs.

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REDIFFUSION Computers

The way business is going

One for the road could cut down accidents

AS I discovered at the near end of my life recently, it is vital to get the salt down before the snow falls. Approaching a road junction, my car skidded out of control towards the gaping jaws of an articulated truck.

But the car did an about-turn on a sixpence and finished facing back up the approach road.

This skid was caused by a layer of black ice concealed by a hard-packed snow cover, responsible for many recent accidents and fatalities.

Research designed to alleviate this kind of driving hazard is in progress at Birmingham University. The idea is to embed a miniature meteorological station in the surface of major roads, relay the readings to a nearby communications box, which in turn talks to a central computer.

With luck it will be possible to warn local authorities of the need for salt or grit the day before the onset of adverse weather to obviate expensive night call-outs of council teams.

The warning system is based on a program written in Fortran for a Digital Equipment 20, although a subsidiary version translated into Basic runs on a Sharp MZ80. It is still at the research stage and the online version is not yet available.

Research leader John Thornes explains that there are advantages in a manual system.

"In some ways we don't want a fully automated system because we want to enter a cone of values, owing to a lack of precision in weather forecasts," he says. For example it may be expedient to speculate on the effects of various degrees of cloud cover.

The program is driven by a heat balance model which takes into account the net income of h from the sun by day and the efflux of radiation by night. O viously cloud cover and ambi air temperature have to be ta into account.

An iterative trial and error proach is taken, with readi every 20 minutes, including se peratures taken from the road face and at a slight depth. Wea readings are also required, s whole core of road has to be moved and replaced with a dri dical box of tricks.

Three such gadgets, called Ma sensors, are soon to be installed sites around Birmingham on M6 and M42 motorways. T trouble is that, because of the weather, it has not been possible place them.

One thermistor has been in place for three years on the M near Reading and the whole pro ject has been in progress for se years, funded by the Transp and Road Research Laboratory.

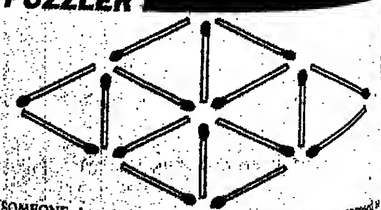
"We are in full co-operation with the Met Office, which has such scheme of its own," s Thornes, who started the pro at University College, Lond and took it with him when moved to Birmingham.

Other universities with meteorological bent are Read which is the only one with an graduate course in the subj Edinburgh and Imperial Colle which both have masters' course

"Our course is different from those," says Thornes. "It is not applied, being composed of ap plied climatology and meteor logy."

A possible future development is a Prestel link with a page-by page breakdown of statistics and forecasts.

PUZZLER



SOMEONE showed me a new match puzzle over Xmas, supposed to come from Japan. This diagram has eight equilateral triangles outlined by 16 matches. The problem is to take four matches away and leave only four equilateral triangles of the same size as before, with no loose ends protruding from the figure.

See page 24 for solution.

OP SPOT — by Andrew Thomas

What makes a job attractive to 'wanderlust' ops staff

HANDS up all those who read this paper from the back. I thought as much — all those tempting jobs for junior ops in Bermuda, company Porsche, no shifts.

But what makes a job attractive to an operations person with wanderlust? To find out, I talked to two recruitment consultants from one of the largest agencies in the country.

Jerry Green has been involved in DP recruitment for seven years, during which he has witnessed a fundamental change in the traditional career path of operator, senior op, shift leader, programmer/analyst.

"Programmers rarely start as operators these days. You can find yourself stuck as a shift leader — 25 years old and at the end of your career," says Green.

Having been a shift leader aged 25 myself and still involved in the industry today, I questioned his statement. Surely there are still vacancies for operations managers and operating systems support personnel?

His reply was that, while there certainly are openings in operations management, they are small compared to the number of hopeful applicants.

The first advertisement he placed for an operations post elicited 260 replies. "With that number of applicants, you must always be up against at least half a dozen really top quality people. The competition is very tough indeed."

Green added that he was not aware of any DP managers with an operations-only background. After a prolonged discussion, we failed to decide whether this was due to a genuine inability on the part of senior operations personnel to perform the job adequately (which I find highly unlikely), or a result of acute conservatism throughout the industry — DP managers have always been systems people, so only systems people are considered when recruiting them.

GREEN . . . "Competition for ops management jobs is tough."

So what does make a job attractive to operations staff?

"Money", he replied simply, "and no shifts." Some firms offer tempting perks — a brewery gives each employee a free monthly supply of beer, and a car firm has a company car scheme (a nominal sum is deducted from salary and you receive a new car every six months with tax and insurance thrown in). But money is the main attraction.

Another trend in ops staff looking for a new job is that they will nearly always go for promotion as well as a change of employer.

"They don't want to go from being an old boy at one site to a new boy at the new one without some increased status," says Green.

As for programmers, he sees a "new breed" who actually *want* to learn new skills and for whom money is of secondary importance.

"Operators are much more basic," he added, "mostly interested in money and their comfort."

That may well be his experience, but I for one know of a few people who might argue the point.

To the position of seeing the jobs market from both the company and applicant ends, Green is ideally placed to spot some of the more ludicrous goings-on.

A bank has a rather inflexible remuneration policy which means that an employee can only get a rise following an annual review, even if he is promoted.

When Green's agency ran a series of advertisements for vacancies at the establishment, five of the applicants turned out to be already working there. The only way they could get an immediate rise was by leaving and re-joining.

There have also been instances of managers employing staff on higher salaries than their own in an attempt to attract the best people.

The other professional recruiter I spoke to was Alastair Campbell, who is responsible for contract staff at the same agency. I asked him what the contract operator market was like at the moment.

"It's died a death," he replied. "The days of the contract operator are over. A year ago operators were contacting us to ask if there were any contracts going. No one phones now."

What about operating systems support then? "MVS systems programmers, where are you?" came the cry from the heart. "Operators used to be a race apart, but now the systems programmers have taken over from them."

Campbell went on to describe what has become the most awkward DP employee to handle — the contract systems programmer who is a technical wizard, and knows it. He or she has little or no respect for authority and needs very careful handling if he/she is to be put to the best use.

Campbell says that systems programmer with three years' experience of MVS or CICS can go anywhere in the world and earn good money. Generally speaking, they will be single and have no desire to work their way up the normal promotional ladder to a supervisory post. The technical challenge provides all the motivation needed.

CAMPBELL . . . "The days of the contract operator are over."

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DISASTER

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In an old mining town, where fortunes were once made with the pick and shovel, less physical activities are moving in. A prestigious new data centre was built, and as business had not yet reached the point of needing three full shifts, the night security guard was alone in the building.

After another uneventful patrol of the installation, he returned to the guard room but, on entering his office, heard a noise behind him.

Swinging round to confront what he imagined would be an intruder, he was surprised to see the entire installation disappear into an old mine working, leaving only the guard room intact.

Moral: Build your computer room where you were going to put the security guard's office.

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NAS names two for top European jobs

TWO senior management appointments have been made at National Advanced Systems. John Curran has been named vice-president and director of European marketing and John Clements vice-president and regional director for Northern Europe.

Clements is already managing director of National Advanced Systems (UK) and will continue in this role. His new responsibilities are for the company's activities in Scandinavia and Israel.

Curran will be responsible for strategic product marketing and marketing support activities in abuat 12 countries.

The company is a wholly owned subsidiary of National Semiconductor.

Mike Purser has joined Trend Communications, the data communications division of Phicom, as product marketing executive. Most of his 20-year career in the computer industry has been spent as comms manager with Colthns Radio. He was a project manager at Arbat UK immediately before joining Trend.

Richard Finney is area sales manager at Anfo-Gravure's office systems division. He joined the company's microfilm sales organisation in 1980, following a career in marketing COM (Computer Output Microfilm) and computer services for Vickers Management Services, and before that in data processing with ICL.

Comshare's Poulter dies

COMSHARE'S deputy managing director Roy Poulter has died at the age of 47. He had worked in the computer industry for 20 years, starting as a salesman for De la Rue Bull Machines selling tabulators, electromechanical calculators and early RCA computers.

After a period as regional sales manager at GEIS he became a founder member of Comshare, erecting regional offices in the UK, Holland, France, Belgium and West Germany.

■ David Thorpe has been appointed Versatec sales support manager. He has been with the company for almost six years. Ray Waterman has joined the company as UK customer service manager. He will be responsible for all servicing and post-sales assistance to users in the UK, and joins the company from Computer Technology.

■ Ronald Ginn has joined P&O Computer Services from ICL as a marketing executive.

■ Graham Dormer has been appointed systems analyst at Rediffusion Computers, based at Leighton Buzzard. He was formerly an analyst/programmer at Business Computer Systems.

■ Ian McMurray has joined Texas Instruments as computer product marketing manager in the company's European digital systems division. He was previously product promotion manager with Burroughs for three years.

■ Simon English has joined Rediffusion Computers as manager of manufacturing technology. He was previously with ICL as manager, production engineering and preproduction. Mary McKenna joins the Irish branch as junior systems analyst.

Joining the board

FORMER marketing director of Tempo Computer Services Joe Frazer has joined the board of Enterprise Systems Group to head the Adnet division. Adnet markets a computerised air time information and planning system.

Frazer worked in the sales and marketing department of Associated Rediffusion when the London weekday ITV contractor in the Fifties and by 1980 was assistant departmental head of administration. In 1962 he joined Southern TV as head of sales administration and went from there to Tempo, where he became marketing director in 1979.

Shires

Silver

■ Philip Shires has been appointed president of the data products division of Lear Siegler. He had been vice-president of marketing and sales since 1979, and has been with the company since 1975.

■ Keith Silver has joined Rediffusion's Holborn Hall broadcast systems analyst. He was previously a program analyst at NCR.

■ Gerry Langden has been appointed sales executive, terminal systems, at Harris Information Systems' international division. He was previously with Systime as a salesman.

■ Tony Dewahury has been appointed to the sales force of TMS, where he will be responsible for sales in Wales, the North-West and the West Midlands. He was formerly a salesman with British Olivetti.

Langden

Dewbury

DIARY

FEBRUARY 1

Office Automation, fact or fiction? BCS Hampshire branch. Simpact House, Shedfield. 7.30

Microcomputers in a business environment. BCS Suffolk branch. College of Higher and Further Education, Rope Walk, Ipswich. 7.00.

FEBRUARY 2

CCAB – computer audit guidelines. BCS Auditing for Computer Group. Connaught Rooms, Great Queen Street, London. 4.40.

Commercial application packages. BCS Kent branch Kings Head Hotel, High Street, Rochester. 7.30.

The computer and the environment. BCS NW London branch Railway Hotel, London. 7.45

Occupational testing. HPM Huntingdon branch. Wheathead Hotel, Coventry Road, Sheldon, Birmingham. 7.30.

FEBRUARY 3

Secure systems. BCS Edinburgh branch. Mountbatten Building, Heriot-Watt University, Grassmarket, Edinburgh. 5.30.

BBC computer literacy project. BCS Humberside branch. Hull College of Higher Education. 7.30.

System X. BCS North Staffordshire branch. Crown Hotel, Stone, Staffs. 8.00.

Teach yourself CAT – evaluation of computer assisted training. HDPM Central London branch. Alregro Software, Imperial House, 15-19 Kingsway, London. 6.00.

Staffing and training in data processing. HDPM Sussex branch. Training Centre, Exceat Insurance, Hill Barn Ln, Worthing. 7.00.

FEBRUARY 9

The electronic office. BCS Croydon branch. Maple Room, Fairfield Halls, Croydon. 7.11.

Unix. BCS Harlow branch. Norfolk Room, Saxon Inn, Southern Way, Harlow. 7.30.

Visit to IBM Greenock. IDPA Scottish branch. 7.30.

Information technology – the next five years, current developments and their implications. HDPM W. London to Oxford branch. Hull Hotel, Gerrard Cross. 7.30.

FEBRUARY 10

Exotic graphics. BCS Bristol branch. Department of Computer Science, QUB, Botanic Gardens, Belfast. 2.30.

Kidney Unit visit. BCS Bristol branch. Contact PD Hemming Engineering Computer Centre, Rolls-Royce, PO Box 3, Filton, Bristol. Tel: 693871 ext 904.

CONFERENCES

■ PERSONNEL costs now constitute over half the average computer department budget, according to Frost and Sullivan, which has organised a conference called Motivating and Managing Computer Personnel, to be held at London's Cumberland Hotel on March 24-25. The conference explains how an organisation can analyse its existing environment and determine which areas need improvement. The techniques for fine-tuning an organisation where staff motivation is already at a satisfactory level will also be covered. Sessions will include short lectures, and what Frost and Sullivan terms "learning by doing." Specific techniques for enhancing DP motivation and actual cases of improving productivity and reducing staff turnover will be reviewed and discussed. Details on 01-8377/9.

■ Communications 82 exhibition will be held at the National Exhibition Centre, Birmingham from April 20-23. A conference will run between April 20 and 22 on the same site. Organised by the IEE, it forms part of the programme for Information Technology Year, and will main theme of the conference will be the convergence of telecommunications, computing and microelectronics. It is intended as a forum for the exchange of information and views on the latest trends and developments in communications. Topics include switching and PABX; radio systems; informatics; LSI for communications and transmission. Details from Christina Dagnall at the IEE on 01-240 1871 ext 280.

■ MIE 82 is the medical informatics conference sponsored by the European Federation for Medical Informatics and the health care specialists of the Irish Computer Society. It will take place in Trinity College, Dublin, from March 21-25. An exhibition will run concurrently. The conference will cover a range of medical informatics topics and there will be teaching sessions, workshops, round table and panel discussions. Themes of the conference are laboratories; nursing; general practice; ambulatory care; medical records and obstetrics/perinatal medicine. Details from conference secretariat, MIE 82, 44 Northumberland Road, Dublin 4, Ireland. Tel: 684244.

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Is purchase or leasing the best way of getting a computer? This feature looks at the methods of acquiring a mainframe

Decision depends on tax and cash

by Della Bradshaw

THERE are a thousand and one ways to buy a computer and all of them are expensive, according to Brian Johnson, managing director of NMW, a computer bureau providing specialist services to stockbrokers.

Over the last ten years, Johnson has been responsible for the purchase of a variety of computers, most recently two ICL 2960s, costing over £1.5 million. His fundamental advice is to pay cash whenever possible.

But he points out that whether one is buying a mainframe or just a small personal computer, it is the tax and cash situation which finally determine the best way to purchase.

A company which wants to buy a mainframe and perhaps a network of minis to go with it faces a bewildering choice. Should it pay cash, or lease the machines? Should it lease-purchase them or put them on hire purchase or go for a major bank loan?

One large US oil company registered in the UK, with a variety of subsidiaries scattered around the country, decided to use three of these financing methods. The reasons for the choices it made clearly illustrate the impact that correct financing can have.

At its head office in London, the parent company made a straight cash purchase for its £1.4 million IBM 3031. This was dictated by the profitability of the company: it had large cash balances on hand, together with few capital expenses. This enabled the accountant's department to write the machine off against tax over a period of four years.

In the rest of the country, distributed minicomputers were sited at the plants and formed small local data processing centres in their own right. Wherever possible, the minis were located in special development areas.

This enabled the company to claim the generous capital allowances available in places like Cornwall and parts of north-east England – up to 100% in some cases. In fact, the mainframe might have gone to one of these areas had it not been for communications problems.

Where the minis were going into profitable subsidiaries, the parent company dictated that hire purchase over two years should be used. This meant that the company would eventually own the assets, could claim the capital allowance, and pay for the machine at a rate that was cheaper than paying cash in terms of the company's own cashflow.

Where the mini was going into an unprofitable or only marginally profitable subsidiary not located in a development area, the head office accounts department decided to lease the machines. This allowed the leasing company to benefit from capital allowances and pass them back to the oil company subsidiary in the form of lower charges.

During the two years it took to install the network, the company also rented minicomputers from time to time, when they were only needed for a short period.

In general, renting is expensive, although it can be directly offset against tax. Companies like IBM and ICL will look to recover the cost of a rented machine in as short a time as possible, so rental is useful where the need is temporary, or the technology is changing fast.

For the smaller company, buying a minicomputer or a micro-based small business system, the impact on cash flow is nearly as important as the impact on the profit and loss figures.

On the other hand, if the monthly costs of leasing or lease purchase are so high that they keep the company in a continuous cash deficit, incurring high overdraft charges, then there is a case for a business asset loan such as that offered by Lloyds Bank.

Although interest charges are high, an asset loan will conserve cash flow and enable the company to own the computer. The company can also claim a first year allowance (FYA) on the asset, and charge the full capital value against tax in the year of purchase.

For a young company with a taxable profit on the books, the effect can be dramatic. Where an annual profit of £10,000 might attract corporation tax of £4,200, a first year allowance of £7,500 to cover the purchase of a small business system can reduce the tax liability to as little as £1,050. After that it is a case of fine arithmetic with an accountant to ascertain whether cash, a bank loan or lease purchase is the best solution.

For bureaux which offer a time sharing service, the choice of financing is particularly difficult. If the bureau is running near to full capacity on the machines it is using, high income and low overheads could create potentially heavy tax liabilities.

One London-based bureau decided to resolve this by buying all the terminals to be used at customer premises directly out of the company's large cash balances. In this way, the bureau retained all the capital assets, plus the flexibility to charge them against its own profits, on its own terms.

The company wrote the mainframe down over two years, and took full first-year allowances on the terminals. The end effect was more competitive prices to its customers, and an incentive within the bureau to keep the latest technology in its customers' offices. From a tax viewpoint it meant little liability from year to year.

Another important factor to consider when acquiring a computer is VAT. The VAT charge will be 15% on top of the purchase price. If the machine is leased, the VAT is spread with each payment. On the other hand, machines which are on lease purchase, loan or cash purchase can be used to recover all the VAT in the quarter in which the machine is acquired.

JOHNSON . . . Choice is bewildering, and every way is expensive.

In the staff agency business, or for self-employed contractors, with very few offsettable VAT inputs, the VAT should be fully recoverable, if properly handled.

And at this point it is perhaps important to mention the recently much maligned operating leasing system, which takes the residual value at the end of the lease period. Because of this the staff have to be very familiar with the machines they are dealing with, which in almost all cases will be from IBM.

For this reason, more and more large operating lease companies are becoming distributors for IBM equipment, ordering in bulk, and dealing in second-hand equipment.

Not only can these companies give advice on which equipment to buy, which other leasing organisations will not, they can also give shorter leases or cheaper ones. For example, United Leasing, which does about £25 million of business per year and has about 100 customers, offers its customers an average saving of 20% on either cost or lease length compared with finance lease companies, according to the company's chairman, Parry Mitchell.

But they deal with only the bigger customers like British. Steel and Esso Petroleum, which lease £5 million of equipment from United Leasing. The company's smallest customer leases between £50,000 and £60,000 alone.

At the other end of the scale, when people are contemplating acquiring a computer for their own personal use, they face much the same range of financing options as a company does, with the exception of operating leases. The only difference is the problem of being able to offset either the cost against tax or the VAT paid against VAT charged.

According to statistics at Apple Computers, a significant proportion of personal computer users are in the computer business themselves, so they should have little trouble persuading their bank manager that they know exactly what they want to use the computer for.

Unless the microcomputer is very small, such as a Sinclair or a Commodore Vic, the comparative costs for the different means of acquisition should be easy to establish, as they do not have to involve the complicated tax calculations that companies have to calculate.

What the above cases highlight, especially in larger companies, is the need for good financial advice, because the purchase of a computer is so directly linked to profit, cash flow and tax liability. But effective advice, even from an accountant, will be dependent on how good the information he receives is.

For instance, the judicious spreading of computer purchases over a period of years, particularly where they are the working assets of a business, can still produce eventual tax exposure.

A good accountant, well-informed, can often use that potential liability as an incentive to help expand the business by accelerating depreciation charges, or perhaps even the purchase of another computer.

Major user helps others get into the act

BARCLAYS Bank takes computers seriously.

The company has a chair in industrial microprocessor applications at Manchester University and uses in-house computers for anything from personnel training to customer services and cash flow predictions.

It is the largest information provider to Prestel via Baric, a company jointly owned by Barclay and ICL, and has spent more time and money looking into high technology than any other UK bank, according to Ian Duffel, manager in charge of high technology in the large business division at Barclays' head office.

Now Barclays is publishing a paperback called Make a Success of Micro-computing in your Business. Ian Duffel expects the book to help smaller companies thinking of acquiring computers or computer time and to prevent them from falling into some of the more basic pitfalls of computer purchasing and leasing.

Barclays deal with loans for computer installations of all sizes through its business loans and business expansion loans. The business start-up loan can also be utilised if the computer is the key asset in a start-up situation, and provides anything from £5,000 to £50,000 over five years, with repayments linked to royalties on sales rather than the amount of outstanding loan. The business expansion loan deals with loans from £3,000 to £500,000.

For large mainframe installations, repayments on these loans can be between about eight and 10 years, but loans for buildings to house computers, and other less "dateable" commodities, can be extended over anything up to about 20 years.

Jon Sanders, the manager of Barclays' Oxford Street branch, says that there are three types of customer that he deals with in the computer area. "The first group want to install computers to increase their profits. They have already done a lot of research into exactly what they want, and the cost benefits. This is the easiest group to deal with from our point of view.

"The second group are people who want to buy computers to get tax allowances, but do not really know what they want or why they want it. We try to persuade them to seek expert advice on the different machines available, and to do a full cost benefit analysis.

"The third group are those people who really could become more efficient and profitable by installing a computer, but haven't considered this as a possibility. Banks and accountants have to deal with the end products generated by the systems of these companies."

He went on to say that many companies in the second and third categories underestimated the time needed to get a system going live, a point emphasised by Jim Chester, area advance manager of the inner city area office of National Westminster Bank.

"Companies just do not realise that they can often spend as much actually getting the system installed, because of the time it takes, as they do in actually purchasing the computer itself.

"Timing is of utmost importance and we have seen some companies get into horrible messes because of this. They put their sales ledger onto a computer, and then find no invoices are coming out, so they end up with a cash flow problem."

Customers are encouraged to move over to computers by doing parallel runs to begin with, the same way that NatWest installed its own computer systems.

Like Barclays, NatWest has financed computer purchases ranging from micros to installations linking the UK and Europe. For computers under £50,000 it deals with the purchase as an item of capital expenditure, with three to five years as the standard repayment period.

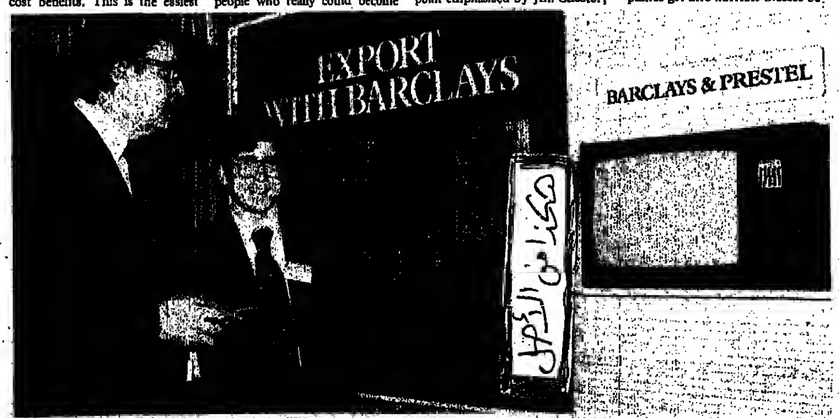
"When a customer comes to us the main thing we try to find out is why he wants to buy a computer, rather than lease one or use a bureau," said Jim Chester. "If he can take full tax advantage of the 100% first-year allowance, then purchasing rather than leasing could be a good idea.

"If a company wants to buy a mini or mainframe, then we would be particularly interested in the calibre of its data processing department, and whether it has the personnel to achieve full profitability on the new system.

He added that there were only two main factors which favoured buying a computer. The first is an increase in the volume of business and profits, and the second is stabilised or decreased outgoing costs, a point reiterated by Barclays.

"These are the only two factors which are really important," said Jon Sanders. "If the cost benefit analysis is right then there are really no problems."

D. B.



Information Technology Minister Kenneth Baker discusses Prestel with Ian Duffel.

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FINANCE FOR THE COMPUTER– 2

'Dramatic changes' at IBM will favour operating lessors

by Boris Sedacca

UNTIL 1956, the year when IBM signed a Consent Decree with the US Justice Department, IBM was largely a rental company. IBM salesmen would offer their customers "flexibility", and encourage them to gradually increase their data processing budgets in alliance with the DP manager, who would lobby for IBM's case within his company to further his own natural empire-building instinct.

Machines therefore came in and went out of customer premises in other customers, and IBM began building up substantial stocks of rental equipment which today are estimated at $30 billion.

The problem with rentals is that a company does not get cash on day one but month-by-month. Certain pieces of equipment such as printers and terminals have a long life with customers; but on equipment such as processors and disc drives, where the technology is not so stable, this can mean that stocks of unwanted equipment are built up.

Within the last two years, and particularly in the last three months, there has been a remarkable shift from rentals to outright sales by IBM. One example is the volume procurement scheme announced late last year on the 4300 range of medium-sized mainframe processors.

Another is an experimental loan scheme currently being operated in the US between IBM and Citibank for small equipment. The scheme may be expanded to other countries, and if it is successful, to cover larger machines too.

> **'IBM cannot tell its customers to buy, buy, buy, then obsolete a machine after six months'**

According to Parry Mitchell, chairman of United Leasing, IBM's view of the leasing companies, which Mitchell contends have been acting as unofficial distributors for IBM, is ambivalent.

"IBM is pleased when you buy its equipment but regards you as a competitor when you sell it again as secondhand equipment. In effect the leasing companies have become self-appointed distributors for IBM by arranging installations, providing features or removing them, and so on."

IBM now shifts the risk of obsolescence from itself to the buyer but according to Mitchell, if IBM is now taking a more aggressive posture (which he says he welcomes) and telling customers to buy more, it should show more understanding for their concerns about obsolescence.

"What I am saying is that IBM cannot tell its customers to buy, buy, buy, and then obsolete a machine after six months. It must provide better product guidance in the future. If it is getting in on a new game, that is, selling, then there have to be new rules.

"The changes now going on at IBM are the most dramatic in living memory. It is going to change its distribution methods and its relations with leasing companies, software houses and other hangers-on. It cannot continue to be an umbrella and do everything itself.

"I believe IBM is now moving closer to the leasing companies and using them as a mechanism to sell competitively. But the time to lobby the people at IBM for a better deal is when they are in 'decision mode' and now is the time. If you try to change things at IBM after it has decided on policy, you can forget it."

Mitchell's own lobbying has aimed straight for the top. He has written a letter to John Opel, IBM's president, describing himself as an "investor" in IBM products and contending that IBM should become "more open and more honest" in providing information on the life expectancy of its machines.

"It is a policy which, when wrapped up with your obsession with secrecy, strikes me as unnatural and non-conducive to a trusting business, and notwithstanding antitrust, competitive and other considerations, is one which I feel to be well overdue for change," Mitchell wrote.

Mitchell then cited the example of the 303X series mainframe processors announced in 1977 as a stopgap to the large-scale 308I series.

The first machine was the 3033 announced in April that year, and when the 303I and 3032 were announced later in October, they gave the impression of being part of the same series because they had a similar purchase/rental ratio and were priced as a series.

Mitchell continued: "At the time you announced the 3031 it was clearly evident that your development program on the 4300 series was well advanced since this was announced in January 1979 and the Model 2 upgrades shortly thereafter. Therefore at the time the 3031 was introduced, IBM must have been aware that the machine would be obsoleted within seven months of its first delivery."

> **'The marketing choice IBM offers us all is . . . akin to that of a Las Vegas croupier'**

Similarly, first deliveries of the 3032 were in the spring of 1978, but by October 1979 IBM had announced a 3033N and by November 1980 a 3033S, both of which provided better price/performance and effectively curtailed the viability of the 3032.

"As I see it, computer users and leasing companies who invested in the 3031 and 3032 got a raw deal, whereas others who elected to follow the 3033 path have done very well. Yet, when these machines were announced, your company laid equal emphasis on the economics of each of the three processors."

Mitchell also took IBM to task on a more recent situation concerning the 3880 disc controllers. He explains that IBM sells some machines with "holes", which is a way of telling customers without explicitly committing itself on paper or otherwise, that forthcoming developments are just around the corner.

It did the same with the 3081 large-scale mainframe processor which may be field upgraded from a Model D to a Model K to provide almost one-and-a-half times the power.

The 3880 was originally announced in three models: Model 1 was the main control unit for existing 3350 and 3370 disc technologies, which Models 2 and 3 connected to the new-technology 3380 disc devices. Last October, IBM announced its new Model 11 for 3350 disc devices and Model 13 for 3380s, both of which had substantially increased native processing capabilities.

Mitchell continued: "In October, your company announced the 3880 Models 11 and 13. At the same time you informed the world at large that customers who purchased the 3880-1 control units below a certain serial number will not have the facility to upgrade to the newer models, whereas those who have later 3880s-1s will.

"Too bad for the customer who instantly responded to your marketing, and who, having been shown the empty spaces inside the box (accompanied with the usual nods and winks) ordered the machine to find that he now has an unlucky serial number and cannot upgrade.

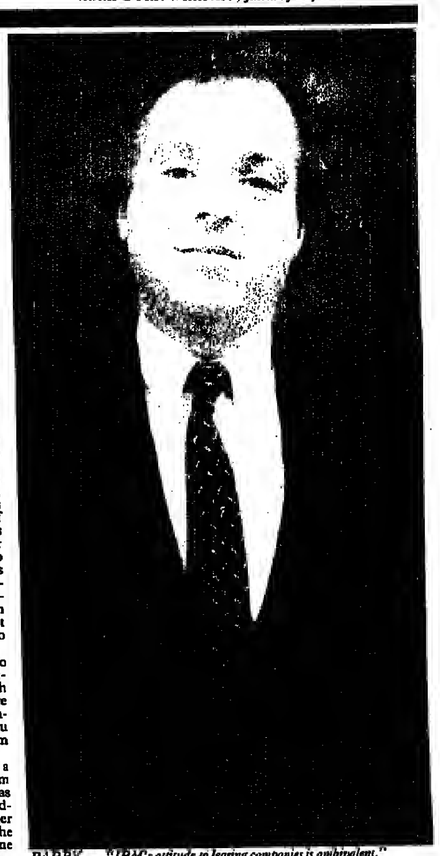
"The marketing choice you offer us all is, in my judgment, more akin to that of a Las Vegas croupier than it is to a company of your size and standing. Serious purchasers and investors in your equipment cannot be subjected to the game of trying to second guess the product planners in your company, particularly when your competitors are more frank and open in discussing their own product development plans, with more to lose if things go wrong.

"There are still many of us who are totally committed to your company and its products and wish you well in your battles. But we find it irksome and difficult to continue to back you up when you frequently pull the rug from beneath our feet."

Mitchell claims to have elicited a positive response to his letter from IBM. "My brother Ashley was invited to IBM's Armonk headquarters to discuss the matter further while he was visiting the US and we have had long phone calls with IBM since that time.

"IBM's reaction has been favourable and they have told us they regard our criticisms as constructive. Things are changing at IBM and people who worked under a certain set of rules now find that the rules have changed.

"There is now a cultural revolution going on at IBM. I believe people like Opel are saying 'We saw what happened to General Motors and how they reacted, and we are going to act before the same thing happens to us', and if it means turning the company upside down, this is exactly what they are going to do."



PARRY . . . "IBM's attitude to leasing companies is ambivalent."

Chance to claw back tax on home micro

by Kevin Cahill

MANY people in the computer industry have bought their own small microcomputer with the intention of developing their own software and selling it.

Many of these people will continue with their PAYE-taxed jobs until their Viscalc boat comes in, and while doing so may be wholly unaware of a potential tax rebate for which they are eligible.

Provided the buyer is genuinely intending to make an income and not just a hobby income, out of the software he or she writes, the whole investment in that equipment could be forwarded for offsetting against the tax to be paid.

For example, a full first-year allowance on an Apple system which is worth perhaps £1,400 might get the buyer £300 or more by way of a rebate.

The test the tax man will apply to what he is doing is stated above. Is the software writing genuinely intended as a business, and not just a hobby? Normally this will mean that the buyers must show some evidence of sales, but the scale of the investment in relation to income may itself be enough.

Also, the fact that the buyer is in the industry may work, taken together with expenditure.

It is a fact of business life that there is an element of risk in most things, and well-planned projects do not always work or make sales. The tax man will only refuse to allow an expenditure if there is evidence that the buyer did not seriously intend to operate as a business.

This is one problem a good accountant may help to sort out with the Inland Revenue. It is worth stressing, in any case, the importance of seeking an accountant's advice before embarking on a project of this kind.

In certain cases the tax clawback may be backdated and up to three years of PAYE payments may become available for return.

Of course, the object of this apparent benevolence is not just to make an expensive hobby cheap. The object in principle is to enable those who are starting up their own business to recover some of the costs against tax already paid.

And do watch that your sales are such that they don't actually create further tax liabilities.

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Up-market form of hire purchase

LEASE purchase, a facility offered by finance houses to commercial users, is little more than an up-market term for hire purchase. HP requires a deposit, but lease purchase agreements can also require advance rentals, depending on the size and credit rating of the company involved.

Most finance houses will offer both leasing and lease-purchase to their customers, although the problem in the case of lease-purchase is that although the title to the asset rests with the leasing company, the company buying the computer claims the capital allowance for tax computation.

In a standard financial lease arrangement, the finance house itself takes all the tax allowances, and so would obviously prefer this kind of agreement.

The actual monthly or quarterly repayment figures for financial leasing and lease-purchase agreements are similar. Approximate figures given by Lombard North Central, the wholly-owned subsidiary of National Westminster Bank, show that per £1,000 capital cost, a customer on a financial lease would pay £96 per quarter on a three-year lease, and £64 a quarter on a five-year lease.

If the computer is lease-purchased, the repayments would be £109 per quarter over three years and £78 per quarter over five years.

Although the company acquiring the computer by lease-purchase has the advantage of owning the equipment at the end of the lease period, technological obsolescence means this is not a major factor in deciding whether to lease or lease-purchase. The company which can make the best use of lease-purchase is the one which can take full advantages of the tax facilities and of both the capital costs of the acquisition and the interest on the rental paid to the finance house.

A finance house like Lombard North Central, the biggest in the UK with over 100 branches throughout the country, offers all sorts of rental options on lease-purchase. Decelerated and accelerated rentals, for instance, allow for higher rentals to be paid towards the beginning or towards the end of the period, based on different financial requirements.

Lombard has financed the lease and lease-purchase of computer systems from small business machines worth about £5,000, to £1 million-plus installations.

A spokesman in the industrial business development department of Lombard claims that financing of this kind can take as little as 24 hours, but usually takes at least a few days.

He went on to say that although Lombard is continually talking to computer manufacturers and advertising its leasing facilities, most of its clients are either recommended to it by National Westminster Bank branches, or part of their existing customer base. So companies which have already acquired equipment through lease or lease-purchase from Lombard will often come back.

Like all finance institutions, Lombard prefers leasing hardware to software, although it is prepared to lease applications packages. However, it can arrange for an industrial loan to be made to cover the cost of acquiring software.

Payments under a lease-purchase scheme can be at a fixed rate of interest agreed at the inception of the scheme or at a variable rate dependent on the finance house base rate initially introduced in 1970 and calculated monthly, based on a formula using the three-month inter-bank rate on the London Money Market.

It is currently estimated that over half the credit given by finance houses is for industrial and commercial equipment — Lombard claims that over 70% of its business is with this sector. This is a far cry from the old idea of hire purchase.

D.B.

SIMPSON . . . The bigger the system, the longer the hiring period.

Fastest growing variety of industrial finance in the UK

IN the past few years, leasing has risen to fame in financial circles as the fastest growing form for medium-term industrial finance in the UK. According to the Industrial and Commercial Finance Corp (ICFC), leasing has actually increased five-fold in the past five years.

When a company intends to acquire a computer through a leasing arrangement then it usually signs a conventional financial lease, which operates in the same way for computers as for a fleet of lorries.

Because of the high rate of technical obsolescence in the computer industry, operating lessors, which gamble on the residual value of the asset at the end of the lease period, are now very much frowned on in the computer area by the major banks and credit finance organisations.

The terms quoted for leasing a computer from one of the major financial organisations vary not only from customer to customer, but from month to month and from day to day. This is particularly true with the wholly-owned subsidiaries of the big banks, which basically act as a way of investing the banks' profits so as to get as much tax relief as possible.

If a company wanting to lease a computer turns up on its doorstep on the last day of a financial period, and the leasing company still has £100,000 or so to invest to avoid tax liabilities, then the company trying to acquire the computer has a good chance of getting a very good deal.

Because most leasing companies lease anything from microcomputers to deckchairs, their emphasis is not so much on the equipment that is being leased, as the company which wants to lease it.

Forward Trust, the leasing arm of the Midland Bank, is one such case. "Our strength in leasing comes from hanging our hat on the strength of the customer, not the product," said John McDermott, senior manager in the fixed asset finance department. "We do not give customers any advice on what machine to acquire."

McDERMOTT . . . "We hang our hat on the strength of the customer."

Forward Trust gets in touch with its customers through its own company and subsidiary networks, through consortium companies, computer manufacturers and direct to the public by direct mail shot. It can lease peripheral items or small pieces of equipment costing as little as £1,000 under its small ticket leasing scheme, and covers the range right up to mainframes and networks.

A company like Hamilton Leasing, on the other hand, gets its customers directly from the computer or machinery manufacturer. It deals mainly in the smaller end of the computer market, especially in office equipment, and has contracts with manufacturers such as Kalamazoo, which sends customers who need leasing agreements to Hamilton.

Hamilton is more forthcoming with its approximate repayment figures. It reckons that a piece of equipment valued at £10,000 will cost £68 a quarter on a five-year lease, and £100 a quarter on a three-year lease.

Neither Hamilton nor Forward Trust is too happy about leasing software. Forward Trust said it was happy to deal with the two combined if the software element was less than 40% of the total cost — because, unlike hardware, it is difficult to claim software as a capital expenditure against tax.

But one of the biggest problems facing leasing companies like Forward Trust is the problem of maintenance and customer dissatisfaction. The leasing company legally owns the asset, but all warranty claims on the equipment are passed on to the lessee so that he has to deal directly with the maintenance agents rather than going through Forward Trust or other companies.

When the primary period, usually between three and seven years, is completed, a secondary lease period, which is often open ended, can be initiated. Hamilton says this usually costs the customer 2½% of the original capital cost, which is to say that a system which originally cost £10,000 would cost the lessee £250 a year on a secondary lease. This is also referred to as a "peppercorn" rental.

Forward Trust claims that if the asset is sold at the end of the primary period, the customer will get about 95% of the sale price.

Given the increased emphasis in recent years on leasing as a means of acquiring large items of equipment, it is surprising that computers have not figured more prominently in the statistics. According to Hamilton Leasing only 10% of the numbers of leases it contracts are in the computer field.

And ELA, the Equipment Leasing Association, notes that in the mid-1970s 24% of all equipment leased was computers, whereas today only 17%-18% in value terms of leasing contracts are in the computer field.

John McDermott explains this quite simply. "It's not surprising that the cost percentage of leasing in the computer area has dropped over the past ten years considering the falling purchase prices of computer hardware and the comparatively escalating costs of other assets that we lease."

Still, with ICFC Leasing providing over £24 million of leasing and hire purchase in the last financial year, that still means quite a lot of money.

D.B.

When flexibility counts ICL users like to hire

OF all the machines ICL produces, only about half are sold, and only a proportion is sold to the end user.

Of the half which stays in ICL's hands, some machines are leased and others hired out. The hire contracts offered by ICL can be one-year or three-year exchangeable contracts or a five-year contract with no exchange in the first three years, covering most of its range except for some smaller systems which can only be acquired by outright sale.

ICL also offers temporary hire facilities for periods of less than a year, but these form a minute proportion of the actual number of machines hired out and are expensive, calculated at the cost of the yearly rate plus 50%.

According to Peter Simpson, director of commercial services at ICL, the bigger the system the longer the hiring period, although all ICL machines, with the exception of the smaller purchase-only models, are hired with equal regularity.

ICL insists in doing its own maintenance on machines hired from it, and provides a range of services from customised software and application programs to the hiring of programmers and operators.

Systime has only been offering rentals for the last six or seven months on systems from the Systime 5000 upwards, that is anything above about the £7,000 mark. It has about 30-40 clients at present, with the largest amount of equipment out to one client valued at about £120,000.

Systime usually provides its own maintenance service, and guarantees to provide maintenance at any installation within four hours. It also provides other customer services, from wiring and air conditioning to software packages.

Mike Withers, sales administration manager, thinks the reason companies go in for renting computers is company policy. "Some multinationals and large UK firms just prefer to rent their computers, other prefer to buy or lease."

Peter Simpson of ICL attributes the success of hiring to two major factors. "Firstly our customers want flexibility. They want to avoid having to stick with obsolete hardware. This is particularly true if they know that a new model will be on the market in a year or eighteen months and they don't want to commit themselves to an older model for a longer period than that.

"It's also true that a lot of our customers don't hire all their equipment. They might buy their main system but hire the printers, for example, because they know that in a year's time they'll need a better quality printer, but a cheaper model is perfectly adequate for what they need now.

"The second reason customers hire equipment is because they only need it temporarily. This is particularly true of bureaux."

Systime estimates that it can get back the purchase price of a piece of hardware, plus the interest, in about 37 monthly rentals. ICL claims it would take longer, with a five-year hire, at today's rate costing the customer £20.87 a month for every £1,000 of the original purchase price.

D.B.

Obsolescence means that the advantage of owning the equipment at the end of the lease period is not a major factor in deciding whether to lease.

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Role of technology in changing work patterns

The Re-making of Work, by David Clutterbuck and Roy Hill. Grant McIntyre. £8.95. 216pp.

THE Re-making of Work covers such important topics as flexible and part-time working, working at home and training. There are particularly useful sections covering disabled working people and women at work.

The authors, who are editors of International Management, have certainly drawn on their extensive knowledge in presenting such a well researched and well compiled book.

Basically, the book explains the changing role of work patterns and how technology can help in training and job improvement. At the end of each chapter, a set of immediate action pointers are listed.

Possible guidance is offered in the form of results of a survey on alternative work patterns in 10 Western European countries covering some 3,000 executives.

Interestingly, this reveals that the UK expects considerably more people will be working from home in the course of the next decade, despite giving a negative response to the question "Would you prefer to work from home?"

Meanwhile, the book suggests that electronic mail will be very much in the forefront of technology development. The 60,000 items per day of electronic mail sent in 1980 in Western Europe will have expanded to 19 million per day by 1987. Public data networks and terminal manufacturers could be in for a boom time.

The book does not single out computers as being a special case area, a refreshingly original approach in what is an enlightened study of the rate and effect of job change.

Alan Simpson

Introduction to microprocessors

Microprocessors — a Short Introduction by Eric Morgan. 95pp. HMSO.

THIS useful and well-produced Department of Industry publication is designed to introduce the non-specialist to microprocessors. There are many competitors aiming at a similar market but this book is particularly written for the non-electronics engineer, the designer and the business executive and it would seem to be at the correct level of sophistication for these groups.

The conventional topics are included, with chapters on applications, microcomputers, types of memory, input/output circuits, microcomputer layouts, choice of hardware, the development of software and staffing. There is a glossary of terminology and contributions from other experts. The text is clear and it is illustrated profusely and well.

M. J. Mepham

Detecting errors in programs

A Cobol Book of Practice and Reference, by Robert T. Grauer. Prentice-Hall Inc, Englewood Cliffs, New Jersey 07632. 382pp.

DESPITE the thorough grounding given by beginners' manuals, many students experience a feeling of helplessness when their first serious program fails to work, and they do not know where to look for the errors.

This Cobol Book of Practice and Reference has seven independent sections. It begins with a statement of the author's aims. The first is designed to help new programmers detect compilation and execution errors and the second to give greater mastery of the details of Cobol.

The book is well laid out with programs shown in computer-print, and helpful tips in clearly defined boxes to separate them from the main text. Sub-division of sections and a subject index make reference easy.

Rosemary Shepheard

Keeping systems down to size

Control and Audit of Minicomputer Systems, by the Audit by Computer Specialist Group of the British Computer Society. Heyden & Son, London. 52pp.

CONSIDERING that Control and Audit of Minicomputer Systems has been compiled by senior computer auditors from leading accountancy firms who make up a working party of the British Computer Society the disclaimer from the BCS on the views expressed seems over-cautious, especially in view of the rather brief and condensed size of the book.

The Paper — it can hardly warrant the status of a book — aims to give practical advice on the key areas of control and audit involved in installing and operating minicomputers and small business machines. The authors do, however, concede that there is little fundamental difference between controls relating to minicomputers and those of larger machines.

In fact their overall definition of a minicomputer as being a small computer operated by the user could well be challenged particularly by such well known minicomputer vendors as Prime, Tandem and Digital.

The authors are particularly keen to keep computers down to size. The study notes that with encouragement from hardware suppliers, most installations are steadily increasing in size to ever larger machines and systems. This disturbs the authors faced with the problems of control and audit.

The computer industry might well respond by pointing out that most audit companies are growing larger, probably more powerful and it is up to the accountancy profession to keep pace with technology.

The direction of the publication is very much towards company rather than computer management. One of the main problems it notes is that in auditing computer systems, records tend to be held on magnetic media, which does not lend itself to interpretation by the naked eye.

For such a small volume, it does manage to pack in a lot of sound — if basic — auditing sense. Meanwhile, there would seem to be considerable scope for a more comprehensive and up-to-date book on computer audit.

A.S.

Review for specialists

Query Languages — A Unified Approach, Query Languages Group of the British Computer Society. Heydon and Son.

TODAY'S ideas and theories sometimes become tomorrow's reality. This book tries to set out the functional requirements for a uniform approach for general purpose query languages, which is assumed to be a good objective.

Clearly a great deal more work needs to be done subsequent to the development of the functional requirements, and the Query Languages Group intends to develop some aspects of this work. Until then it may be difficult to assess the value of the present suggestions.

Although it is written clearly, Query Languages is basically for specialists, and provides them with a comprehensive review of the problems and means of achieving a uniform approach. Perhaps the needs of the user should have been more fully researched, particularly in the light of some of the other software limitations which seem to occur on modern and database systems.

A. J. Thomas

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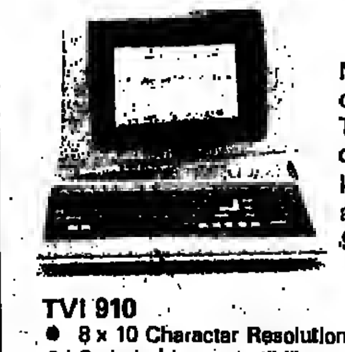

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BOOKS – 2

Update needs lecture course as backing

Introduction to Microcomputers. Erik L. Dagless and David Aspinall. Pitman. 233 pp.

THERE is a dearth of good introductory books on microprocessors and the first reaction on seeing a book called Introduction to Microcomputers by such well-known authors was one of considerable anticipation and interest. Unfortunately, this promise does not appear to have been fulfilled.

The book is a considerably revised and updated version of a previous book by the same authors, based on lecture courses. The present book is based on an undergraduate course and the authors suggest that it would be suitable for courses in electrical or electronic engineering, or computer science.

This is perhaps its weakness – it may well be a valuable text when used in conjunction with lectures which complement the information in the book, but on its own seems to be lacking background material. In particular, there are various terms which are unlikely to be familiar to a beginner but which are not explained.

Some terms in the book are used unconventionally (for example, the word "mainframe" is usually used to mean a large computer but the book states that "a computer mainframe can be attained in many forms . . . a microcomputer sytem for small to medium scale applications").

Also, some unconventional terms are used – for example, the term RWM (read-write memory) is used in place of the more conventional RAM (random access memory), although it must be said that the former is the more accurate description.

There are a few, fairly minor, mistakes such as in the definition of the range of a signed integer but, in general, the book seems to have been carefully proof-read.

So far, this review has been fairly negative but the book has many good points. In addition to the authors mentioned on the cover, chapters are written by three other authors, yet there is little sign of inconsistency of style.

There are various useful exercises at the end of each chapter (which would be far more useful if answers were provided, even if only for selected exercises) and there are a large number of clear diagrams (although a few more at the beginning of the book would have been helpful).

Finally, there is a useful summary of the Intel 8080/8085 and Motorola 6800 instruction sets.

The book, in conjunction with a lecture course (particularly in electronic engineering) would be valuable. Unfortunately, when used on its own, it does not seem to provide an adequate introduction to micros, as its title would suggest.

Adrian Stokes
Director of computing, St Thomas's Hospital, London

'Basic optimisation is best'

Optimisation – A Simplified Approach. William Conley. Petrocelli Books, Inc. 248pp.

THIS book is written for a wide range of readers who are interested in using a new means of mathematical optimisation.

The author is convinced that the methods based on calculus and linear programming belong rather to the early computer age than to the present day, and suggests that these should now in most cases be replaced by programs written in Basic. He demonstrates in the first chapter how this may be done, and extends the discussion in the second to Monte Carlo optimisation.

In the remaining ten chapters he applies the technique to a variety of subjects, both the scientific field and outside it. The applications include chemical processes, pharmacology, medical research and a wide range of business procedures, for example the financial problems of costing, investing and assessing the influence of outside economic factors, the manufacturing questions of mixing and blending, sales decisions like discounting and planning efficient advertising, and transport problems like packaging and shipping.

Each chapter puts its message over by means of examples, of which there are over a hundred in the book. Having examined a variety of applications of his optimisation procedure, the author then gives the student some exercises for practice and a list of books for further reading.

There are appendices on numerical forecasting and the philosophy of mathematics, and an index, but no answers to the exercises. The clear layout and headings make William Conley's book easy to use for reference.

Rosemary Shephard

International software protection

The Legal Protection of Computer Software. Edited by Hugh Brett and Lawrence Perry. ESC Publishing Limited, Oxford, 1981. XIV + 197 pp. £15.00.

AS program piracy becomes more common it naturally brings in its train a growing interest in legal methods of protecting computer software. A new study of the subject is therefore welcome.

This book is a collection of articles by a variety of authors, all with a special knowledge of the subject, and brought together by Hugh Brett, who edits the highly regarded European Intellectual Property Review, and the late Lawrence Perry, a chartered patent agent with IBM who died before publication.

The book is an excellent survey and proves a fitting memorial to Lawrence Perry's expert knowledge of the subject.

Computer programs can readily flow across national boundaries so their protection must be considered in a global context. An advantage of this book is that it adopts this international viewpoint – the authors come from the US, the UK and European countries.

After an introductory chapter by the editors on the technical and legal background, the book moves on to consider the patentability of program inventions in Europe and the US, copyright protection in the UK and European countries, and the current copyright position in the US under the 1978 Copyright Act as amended.

Various novel proposals for protection of programs by hybrid forms of patents and copyright are reviewed, and finally the model provisions for protection drafted under the auspices of the World Intellectual Property Organisation are considered.

The message that the book conveys is that copyright protection, despite its uncertainties, is the most satisfactory form of legal protection presently available. An survey of the problems in an international setting this volume is highly recommended.

Bryan Niblett

Impact of information

Face to File Communication – a Psychological Approach to Information Systems. Bruce Christie. John Wiley & Sons. 1981. 306 pp. £14.50.

MOST people in management, research or DP will probably be familiar with the concept of an information system. Users of such systems will also be aware of the type of facilities that an IS should provide.

In contrast, however, it is unlikely that many people will have any in-depth knowledge of the impact of information systems on their user populations.

If this is so, those interested in investigating this area will find this book most interesting. It describes some of the relationships between human behaviour and the electronic technology used to support information and communication processes in both the office and the home.

Face to File Communication is presented in six parts. The introduction serves both to define the scope of the book and to suggest future directions of development. Part 2 (Basic Concepts) introduces the idea of information, its value, types of IS relevant to home/office use, and discusses the role of information in organisations.

In Part 3 (Behaviour) the structure of office activity is analysed. This section also includes a discussion of the origin and use of information and then introduces suggested "first law of information behaviour". The fourth part of the book is devoted to a study of attitudes: towards information systems generally and of managers towards the office of tomorrow.

Part 5 proceeds to provide a collection of models, theories and techniques for forecasting, planning and managing change. This section concludes with a sketch of the "manager of tomorrow" in terms of his/her pre-requisite skills, personality, motivational structure and ability to cope with stress. In his conclusion, Part 6, the author neatly brings together the findings of the previous four sections.

Much of the book is based upon original research work conducted by the author. The topics covered have been aptly selected, analysed and reported on. Overall, the text is well written; it has a useful bibliography; and it presents readable discussions of the research techniques used.

Philip Barker
Computer consultant specialising in communications and database

Micros – for experts

Understanding Microprocessors. B. S. Walker. Macmillan Press Ltd. 110pp.

IN what is a very technical approach to the understanding of microprocessors, the author takes the reader through logical steps, from basic memory and store to advanced level peripheral interfacing.

It is certainly not a book for the businessman who is looking for a basic printer on his impulse micro buy at the local high street store. Rather it is designed for the serious student or DP professional, grappling perhaps with the BCS or IDPM examinations.

The style of the book is very much that of lecture notes. Many readers would also find fault with the poor quality of paper which the publisher has seen fit to use. There are, however, no complaints on the depth of contents or the up-to-date nature of the book references. 32-bit and array machines, for example, are featured.

Surprisingly perhaps for an in-depth textbook study, exercises and tests are not included – but sets of technical appendices covering electronics, logic and binary arithmetic.

The author, a senior lecturer at the University of Reading, makes the very worthwhile point that the microprocessor is merely a rather cheap computer, and before long will be part of normal life.

Understanding Microprocessors will give the scientifically minded user a useful background into micro technology.

Alan Simpson

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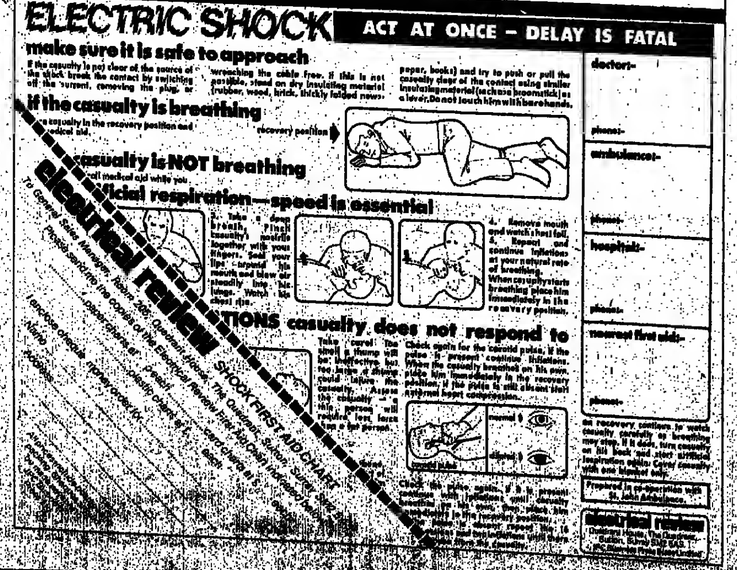


Computer development in the People's Republic has picked up since the Cultural Revolution . . . Della Bradshaw reports

Hand-soldering boards in the Yuan Hua Electrical Company, Guangzhou (Canton).

Part of the production line for liquid crystal display production at Yuan Hua.

Starting late in the game lets China pick and choose

THE initiation of a computer development programme began in the People's Republic of China about 20 years ago. This was based on the realisation that a modern, industrialised nation essentially needed computerised systems to be able to compete internationally and to improve standards at home.

Both in the early years of China's computer development and today, computers from both Russia and the West have exerted a strong influence. But rather than copy them directly, the Chinese have analysed them carefully in terms of their own country's needs and adapted them accordingly.

Mr Ng, an electronics designer currently working in Hong Kong, tells about the time he redesigned an imported Russian computer that literally weighed a ton, reducing it to about one tenth of its original weight without changing its functions at all. For this, he was awarded one of the highest awards for technology given in China, and remained untouched during the Cultural Revolution (1966-1976).

The Cultural Revolution itself has probably quite a serious effect on the development of the computer industry in the country. Certainly the universities closed down most of their scientific and technical courses, resulting in a ten-year gap of graduates with relevant qualifications.

For these and other reasons, it is difficult to say that China is 10, 15 or 20 years behind the West in computerised production. It has been able to study computer development and production that has occurred outside China, and to select aspects which will be useful and reject those which appear to be of no use to it. Thus its development has not been along the same lines as in the West.

This has caused inevitable friction, especially with countries like Japan. An official from Oki Electric Industry, known in Europe for its printer production, said in Tokyo recently that although his company did not actually export products to China, small quantities had certainly found their way there.

This worried him personally in that the Chinese seemed more interested in copying their products than importing them.

Another reason why it is difficult to "date" Chinese computer production is that the whole concept of production and marketing of computers is completely different from that we know in the capitalist world. Even though individual prototype systems might be of quite a high level of sophistication, there appears to be little or no mass production or distribution.

There seems to be rather a chicken and egg argument involved here. Either there is no demand because there is so little advertising and, compared with the West, communications networks are under-developed or there is no need for communications because there is no suitable market.

The Yuan Hua Electrical Company in Guangzhou (Canton) for example, has one billboard in the city advertising its new microcomputer, but whether this is an attempt actually to get sales or not is unclear. In the more northern provinces, such as around Beijing (Peking), advertising is even less often seen.

The government body with overall control of computer production is the Fourth Ministry of Machine Building, and this ministry is divided into numerous research institutes. Actual research, development and production is designated to approved plants and factories.

According to 1978 statistics produced by the Joint Congressional Economic Committee, production of electronic equipment involves 200 major plants, 500 smaller plants and 1,500 neighbourhood factories, employing in total about a million people.

The neighbourhood factories are an interesting development in Chinese electronics production, which began during the Cultural Revolution. Small local factories, producing such diverse items as wooden crates or door handles, were converted to electronics production. Government funding provided equipment and training.

One example is the Torch Semiconductor factory in Shanghai, which was converted to IC production between 1967 and 1969. The existing staff were retrained by major installations in the area, such as the Shanghai Radio Factory No. 14.

During the Cultural Revolution there was also a strong move towards the amalgamation of research, production and teaching facilities in the electronics area. Many university laboratories became factories, for example. At Yuan Hua, many of the employees still refer to the factory as the "laboratory", which was its original function.

The first Chinese digital computer seems to have been the August 1, produced in 1958, and based on specifications of the Soviet Ural-2 machine.

Between 1962 and 1966 the Chinese produced a range of DJS machines. The first transistorised one was the DJS-21, produced in 1966, with a maximum memory size of 4K.

The first microcomputer was produced in April 1977, the DJS-050, developed by the electronic engineering department of Tsinghua University and the No. 6 Research Institute of the Fourth Ministry of Machine Building. The Anhwei Radio Works provided the Chinese-developed MOS LSI circuitry for this eight-bit machine.

Today many factories throughout China produce their own microcomputers, modelled on imported American or Japanese models. One example is the DJS-032A, produced in Guangzhou by Yuan Hua. It has 32K of RAM and 14K of ROM. Peripherals made in the factory are printers, plotters and two-Mbyte floppy disc units.

The factory has spent a long time doing minor production work for Commodore, and works with several Commodore microcomputers. All the memory chips for use in this factory are imported via Hong Kong, but include some produced in Taiwan, which has been on friendly trade terms with China since earlier this year.

The DJS-032A seems to be an identical model to the DJS-332 microcomputer, produced elsewhere in China. This points to one of the main problems in cataloguing Chinese computer production which is that similar or identical models can be given completely different names depending on which part of the country they are produced in.

The programming languages used by the Chinese machines range from Basic, Fortran, Cobol, Pascal and Lisp, to a Chinese version of Algol 60 called PCY. The DJS-032A, for example, can be programmed in Basic, Pascal or Lisp.

But the biggest problem for the Chinese is not so much the programming language as their own language. As yet, unlike the Japanese, they have been unable to devise a keyboard which will allow full operation with Chinese characters.

To get over this problem, some attempts have been made to program their systems to output Chinese characters. This has been done by the addition of a translation factor on to a basic American or European program.

So far these systems can produce about 300 characters. Chinese newspapers, on the other hand, print a minimum of 3,000 characters for basic comprehension.

Whether the Chinese will now give preference to importing Japanese rather than Western machines to help overcome this problem, is a difficult question to answer.

One of the biggest exporters to China at the moment is the Japanese company Hitachi, which has produced a whole range of computers that can deal with the input of up to 3,000 characters, including microcomputers and word processors.

Recently the US government prevented Hitachi from exporting an M-180 mainframe to a Beijing university, which deals with railways and transportation. The reason for this was that the Americans complained that the computer could be used for military purposes.

Whether this was just the US trying to prevent Hitachi from getting a foothold in the Chinese university system, where much of China's computer development is carried out, is difficult to say. Certainly American companies, as well as ICL (Hong Kong), tendered for this contract. The IBM machine which was used for the UN Chinese census had capabilities comparable to the Hitachi system that was banned.

The US more recently prevented an export licence being given for the sale of an advanced weather computer to China. The computer, designed by the University of Wisconsin, would have formed part of a worldwide information network linked to US Weather Bureau satellites.

The "negative consideration" was given to the project because the US government, again, thought the system could be used for military reconnaissance or other tasks detrimental to US security.

While all these international wranglings are going on, large volumes of components are being sent into China from Hong Kong for sub-assembly for Hong Kong companies.

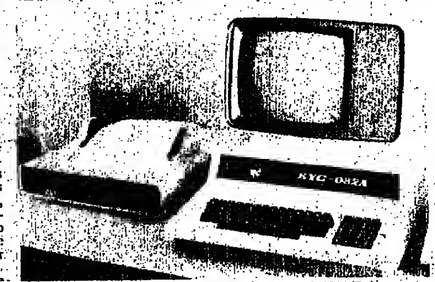
Although not on the same technological level as the mainframe systems being imported from Japan and the US, this assembly work will give China access to the technological developments necessary to build up the lower end of its electronics range, and also the experience of delivering goods in bulk.

Looking to the future, China has obviously still a long way to go before it develops a network of even basic systems. From the point of view of domestic production, communications are obviously vital: This is no mean task in the country which is second largest in area in the world.

Manufacturing, testing and reliability and production in quantity are other problems the Chinese will have to face.

On the other hand, the import of advanced Western or Japanese machines involves currency expenditure that China basically cannot afford. This dichotomy is the basic problem facing China's growing computer industry today.

Liquid crystal display production at Yuan Hua.



The DJS-032A microcomputer and printer produced by the Yuan Hua company.

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PRODUCTS – 1

Datapoint aims for commercial radio business

COMMERCIAL radio stations can take the air with a computer system just announced in the UK by Datapoint. Called the BAT 1700, it is based on a system developed in the US by Station Business Systems.

The system will run on Datapoint's minicomputer equipment. Datapoint believes there is a growing market for the system, especially as the Independent Broadcasting Authority has announced that many more commercial radio franchises will be approved during the next few years.

BAT is used in the management of a commercial radio station, including log preparation – lists of programmes and commercials broadcast – invoicing, accounts receivable and bookkeeping. It can also produce detailed sales and revenue reports, versatile invoicing projections, and an availabilities reporting system.

The BAT system can also be used for music library maintenance, playlist preparation and programme automation system loading.

It can be applied to commercial television stations as well says Datapoint. For example, a Package Inventory System provides financial data and usage information for a TV station's film and tape library. A Media Inventory System keeps track of all tapes, cartridges and other media, providing information about who used them last, their current condition, and their present depreciated value.

The Newscom Newsroom Computer System is a complete editing, printing, prompting, and dispatching system which also allows complete archiving and analysis of news stories.

Datapoint (CW), Ventek House, 400 North Circular Road, Neasden, London NW10. Tel: 01-459 1222.

HP's 9836A desktop computer.

Desktop for engineers

HEWLETT-PACKARD'S new HP9836A desktop computer can gather, interpret, and graphically display data. It is aimed at the computer-aided engineering and computer-aided test applications market.

Similar in construction to HP's 9826A desktop computer introduced last June, the HP9836A has a larger CRT screen with extended capabilities in alphanumerics and graphics.

Display enhancements include underlining, inverse video, blinking, half-bright, and half-shifted dot scheme which improves character legibility. It also has optional data communications capabilities.

Hewlett-Packard (CW), 308-314 Kings Road, Reading, Berks RG1 4ES. Tel: Reading 61022.

Colour graphics with four modular options

THE TDS Easycolour 4200 was developed from the Easycolour 4000, to exploit the dramatic growth rate of computer graphics.

The basic system provides three pages of screen memory, and the ability to view any section of any page through multiple windows. Customer definable colours, symbols and characters are also standard together with extensive editing and scrolling capability.

Four modular options can be fitted. With the page module, local picture storage is increased by the addition of six extra pages of screen memory which can be used as discrete or contiguous pages. This allows complex diagrams to be stored as a single picture.

The trend module offers automatic trending whereby displayed data is scrolled to the left, providing a visual presentation similar to that of a chart recorder.

The port module provides an additional two serial communications interface ports enabling the 4200 to communicate with two host processors or other peripheral equipment.

TDS (CW), Philips Road, Whitebirk Industrial Estate, Blackburn BB1 5TH. Tel: (0254) 676921.

Cheaper printout binding

A BINDING machine from International Money Processing Machines is claimed to offer a simpler and tidier way of binding computer printout, at a lower cost than more traditional methods.

It works automatically, combining use of a drill with heat-seal of nylon tubing. Known as the Perfinbinder, the machine will accept stacked documents up to two inches thick.

Papers are delivered, fully bound, within 30 seconds of start-up. The binding is not prone to rust or stains. Several of the resulting bound documents can also be linked together, by the insertion of a long torpedo-like support.

International Money Processing Machines Ltd (CW), International House, Windmill Road, Sunbury on Thames, Middx TW16 7HR. Tel: 01-637 7481.

Control Data releases 32 Mbyte Finch drive

A 32 Mbyte version of the CDC 9410 Finch eight-inch fixed media disc drive is available from Control Data, for use with minicomputer and microcomputer systems from OEMs.

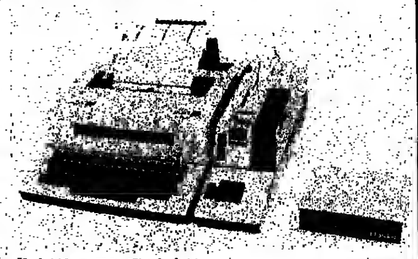
It can be mounted horizontally or vertically in the same space as an eight-inch flexible media drive. The Finch thus can be used in small business systems, terminal and process control systems, and as a memory enhancement or extension for flexible disc drive systems.

Data is stored on three lubricated discs housed in a data module that also contains a rotary voice coil actuator for head-positioning accuracy and rapid access to stored data.

Information is transferred to or from the Finch data module at a rate of 6.45 million bits per second. Single-track and average seek times are 10 milliseconds and 50 milliseconds, respectively, with an average latency time of 8.33 milliseconds.

Extensive use of large-scale integrated circuitry, microprocessor-based control logic and expanded data recovery circuitry in the Finch permits all drive electronics to be contained on three circuit boards.

Control Data (CW), Control Data House, 179/199 Shaftesbury Avenue, London WC2. Tel: 01-240 3400.



Hasler's Super Telex Terminal.

Faster telex messages

THE modular Hasler SP300 intelligent teleprinter has now been combined with the Hasler Telex Unit to form a Super Telex Terminal. The SP300 can be used in any office because of its quietness in operation, an advantage that will speed up telex message preparation, transmission and reception, says Hasler.

Among its new features are an electronic memory, 40-character line display, protected local operation, automatic message transmission and abbreviated telex number directory.

Telex message throughput can be six times faster than that of current telex terminals, claims the company.

Future optional additions to the unit will include a high-security cypher unit and floppy disc.

Hasler (CW), Commerce Way, Croydon CR0 4XA. Tel: 01-680 6050.

Printing for small users

A MACHINE offering small users print runs for continuous stationery of as little as 1,000 forms has been introduced to the UK.

The Wilson Ofcon press offers litho quality printing for small runs which are uneconomic on conventional presses, by means of a microcomputer-controlled photoelectrica process, feeding from bulk-produced standard size packs of punched perforated blanks.

Wilkes-Multimatic (CW), Parkfield Road, Wolverhampton, West Midlands WV4 6EL. Tel: (0902) 49434.

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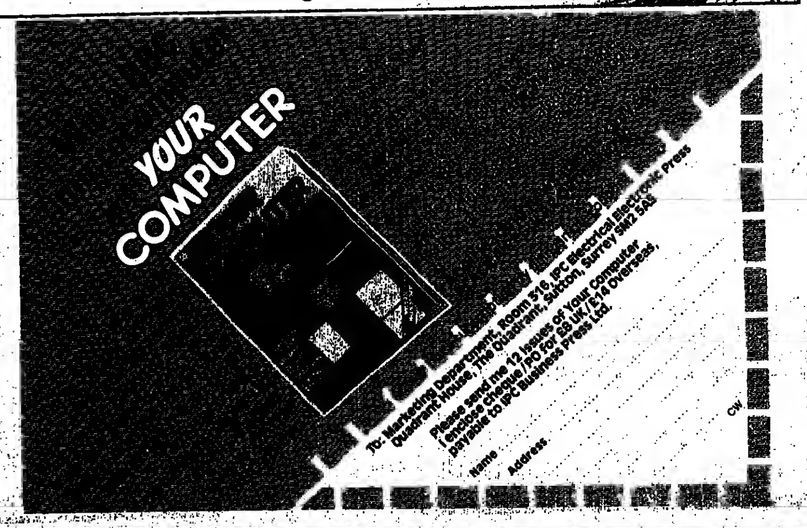

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PRODUCTS – 2

Coupler offers portable Prestel

A COUPLER that provides an acoustic link between standard telephone handsets and all types of Prestel and private viewdata terminals, TV sets and adaptors is announced by OE Ltd, the videotex systems and design specialists.

The instrument, PAC 1, is compact, and only slightly larger than a telephone handset. The acoustic chambers have been designed for snap-fit mechanical coupling of the handset to reduce errors in achieving acoustic transfer.

The acoustic coupler obviates the necessity of a BT jack socket installation, for PAC 1 can be used wherever there is a standard telephone, says OEL. For the businessman this means portable Prestel – in the office, at home, or in a hotel bedroom, assuming equal portability of the viewdata terminal equipment.

PAC 1 is low-priced, due mainly to unique electronic circuitry design, using CMOS chips for low noise and low power performance. There is an easily accessible hinged compartment housing an alkaline PP3 9-volt battery.

PAC 1 . . . Only slightly larger than a telephone handset.

PZC 1 is British Telecom approved to meet Technical Grade 32/Acoustic Coupling.

OE Ltd, (CW), Industrial Estate, Appleby in Westmorland, Cumbria. Tel: 0930 51909.

ICL bids for more of retail systems market

ICL has begun the new year by introducing two low-cost, point-of-sale terminals, the ICL 9505 and the ICL 9507, with its intention of taking a bigger share of the retail systems market during 1982.

The two new terminals will be of special value to department stores and variety chains, and will function with existing 9500 Series products. Prices start at £1,200 per terminal for volume orders.

Both the 9505 and 9507 are compatible with the data recorders and controller systems supplied by ICL for retail applications, and complement the 9510 and 9512 point-of-sale terminals, close to 10,000 of which are now in use around the world.

First deliveries of the terminals offering data collection and negative credit checking facilities are scheduled for the spring. Other options available with both terminals in the summer include the attachment of OCR and bar code readers, magnetic stripe card readers, Kimball tag readers, remote customer displays and remote cash drawers. Fully interactive versions will be delivered later in the year.

The ICL 9505 point-of-sale terminal has a two station printer for providing original copy on audit roll and customer receipts, as well as a single line endorsement facility for validating side inserted cheques or other documents.

The buffered keyboard has 26 function keys surrounding a numeric keypad. Fourteen of the function keys may be programmed as motorised department or cashier keys, or to offer pre-set price look up.

The 9507 is identical to the 9505 but has an additional 40-column slip printer for overprinting sales documentation.

ICL Ltd (CW), ICL House, Putney, London SW15. Tel: 01-788 7272.

ICL's new 9505 point-of-sale terminal.

For first-time CAD/CAM users

TWO new video designed systems from Applicon are aimed at medium or small engineering organisations, first-time users of CAD/CAM systems, or customers requiring low-cost remote systems. The packaged systems include all hardware and software required for either mechanical draughting or printed circuit design applications, in a complete system.

The basic system includes an AGS/892 central processing facility, a sub-set of the powerful AGS/895 CPU, consisting of a DEC PDP-11/34 processor, Applicon's Graphics-32 display processor, a 200 Mbyte removable disc subsystem and an 800/1600 bpi density tape subsystem.

A completely functional system will cost from £70,000 including delivery to site, installation, training and warranty.

Field upgrade to the full AGS/895 specifications is offered, enabling the attachment of four graphics workstations and eight concurrent tasks or activities.

Applicon UK (CW), Regent House, Heaton Lane, Stockport, Cheshire SK4 1DA. Telephone: 061-429 7227.

Compact Winchester disc system

AN innovative approach to [illegible] system integration has been achieved by Plessey Peripheral Systems with its compact Winchester disc-based system.

The new system 23VTI is designed to provide high performance, reliability in a desktop unit with optional rack mounting with additional advantages of ease of installation and minimal service.

The system has 28 Mbyte disc storage – an increase of 40 per cent over RL02 equivalent systems – and can be expanded up to four times to give a total of 112 Mbytes.

A software backup program allows discs to be backed up automatically in 2½ minutes per Mbyte unit and will provide automatic support for individual file saves.

Cartridge Image Backup [illegible] supports RK05 and RL02 disc drives and the TM11 tape unit.

Plessey Peripheral Systems Ltd (CW), Harrowden Road, Barcknills, Northampton NN5 6UB. Tel: (0604) 65151.

The Excel terminal with tiltable display.

Tilting screen terminal

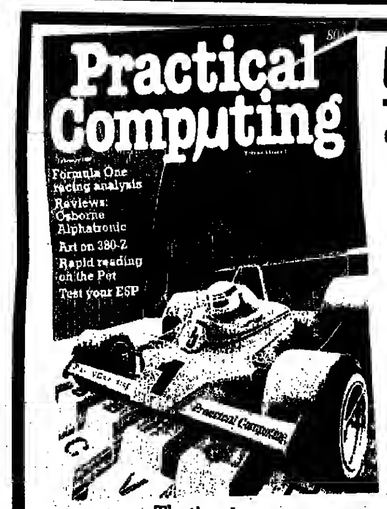
AN inexpensive family of 132-column display terminals which incorporate advanced ergonomic features for office and data processing, comes from Mellordata. The new range, known as Excel, is priced from £599 up, depending on quantity discounts.

Excel is the latest in a series of interactive display terminals from Datamedia, represented in the UK by Mellordata of Colchester. The Excel terminals have tiltable 12in or 14in display screens with a choice of 80 or 132-column format, full Ascii character set with alternate graphic symbols available and an APL set as an option. Double-high and double-width characters are available from the 7x9 dot matrix character generator for smooth or jump scrolling.

Like all the other terminals in the Datamedia range, the Excel family is fully compatible with DEC VT100 terminals and those of Lear-Siegler, Hazeltine and ADDS.

The standard keyboard is detachable and has an 18-key ten-counting style numeric keypad in addition to the normal typewriter layout.

Mellordata Ltd, Woodgrange, East Bergholt, Colchester, Tel: 0206 298181.



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Kevin Cahill heralds the new sailing season by looking at computerised navigational aids for the small boat owner

US Navy to the rescue of the small yachtsman

EVEN in the middle of a British winter, this is the time of year when every sailor's fancy turns to thoughts of the sea. The yachting and boating magazines are full of articles about taking boats out of lay-up, checking off their gear and about how much winter maintenance you should have done which you haven't done.

Spurring the sailing fraternity on is the thought that the Earl's Court Boat Show has been and gone. Heralding the advent of blue skies and clear horizons, the show ushers in a new season along with the New Year.

The show attracted plenty of hard-pressed boatbuilders, even if attendances were cut by the weather. It also emphasised just how much the computer has got into the realm of sextant and snap shackle.

Yachting in the early '70s, when I first participated in this expensive hobby, was unaffected by the existence of the computer. The smallest mini in those days weighed in at about two hundredweight and the only contribution that computers looked like making to the small-time sailor was to provide a conversation topic when those two staples of sailing chat, alcohol and sex, had been exhausted.

Now, for a mere £995 even a small boat can have a satellite-based navigation system, which is a big improvement on the EWBIN method used on my first voyage to Ireland in a Gipsy Moth 21 in 1970.

EWBIN was the acronym for Empty Wine Bottle Inertial Navigation, which operated by slinging (recorked) empty wine bottles into the Irish sea every couple of miles or so. It didn't help us get to Ireland, but the idea was that we could at least find our way back to Wales easily.

Computerised navigation equipment featured strongly at Earl's Court and the main news on the first day was a £4 million order for a small Z80-based satellite navigation system called the Walker 402.

You can buy a Walker system and have access to a complete satellite navigation system, the US Navy's Navset, or Transit. This consists of five satellites circling the earth on a north-south polar axis every 107 minutes, and was first installed in orbit 665 miles above the planet in 1964.

The system was originally set up to enable submarines in the US Polaris Intercontinental Ballistic Missile Fleet to establish their exact position anywhere in the world's oceans.

Transit is supported by a network of ground-based tracking stations, computer centres and timing centres and was made available to commercial mariners in 1966. It is intended to stay in use until 1995.

What made the Walker 801 such a revolution, just two years ago, was the fact that it was priced at £1,500. At that time, most other systems using Transit came in at about £10,000 and up to £30,000, which put satellite navigation right outside the reach of all but the very richest yachtsmen.

And, when you are lost in a fog, probably in a naval exercise area and also going the wrong way down the English Channel one-way system, the importance of exact positioning becomes acutely obvious.

The 801 was hailed as a revolution, partly because of the price, but also because of what the system could actually do. Like its successor the 402, it is basically a real time Z80-based microcomputer.

Using 10K of EPROM to hold the basic calculations needed to decode the satellite transmission, and 2K of RAM to hold startup input, the 402 is an interactive system using interrupts and other devices to fix and then dead-reckon a boat's position.

The satellite information is beamed down contiguously in two-minute messages. These contain time and position data which relates to the satellite, and which is constantly updated.

The satellites move in a north-south polar orbit and the average time interval between available satellites is about an hour and a half.

The Doppler effect is used to calculate the boat's position. This is the apparent change in the frequency of radio waves received when the distance between satellite and receiver is increasing or decreasing as a result of the motion of the satellite, the boat, or both.

By taking the details of the satellite's position and by stripping out the frequency from the phase modulated signals, the 402 calculates the boat's position from the stable reference frequency in the receiver.

To start off the system only five items need to be input. They are keyed in on the keyboard, which is little more complicated than that of the standard pocket calculator.

The principal inputs are the boat's position, accurate to about 100km, the time in GMT accurate to plus or minus 15 minutes, the boat's speed and direction and the height of the aerial from the surface of the sea. The 402 gives a fix accurate to within 100 metres, anywhere on the Earth's surface.

During the intervals between the appearance of satellites over the horizon the microprocessor continues to calculate the boat's position by dead reckoning, and also calculates the next appearance of a satellite from which it can obtain data.

The inputs and corrections to the satellite's position are continuously worked out on the ground and transmitted skywards 24 hours a day.

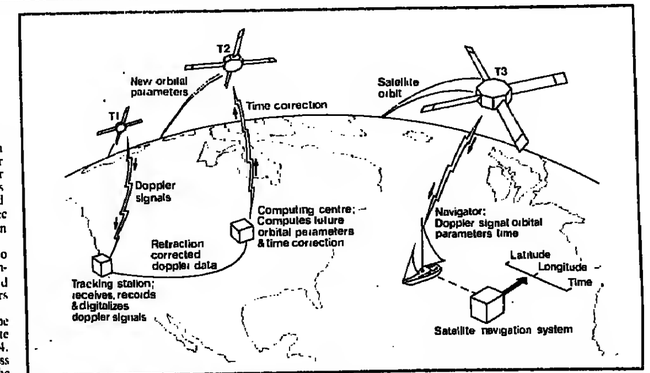
The Transit system is due to be replaced by an even more accurate system called Navstar in 1984. Navstar, which will require less complicated operations in the ground receiver, will be able to give a position accurate to 10 metres, anywhere on earth.

Although the navigation aid, since it is so central to the safety and success of the smaller boat owner, received most of the attention, the ubiquitous micro and other computer devices had also crept into other areas of the small sailors' world.

There is only one thing worse for a small yacht than losing its position, and that is being caught at sea in really bad weather. One fascinating device aimed at preventing this is a radio-based facsimile machine which measures little more than 18" by 18" and which produces complete weather charts from weather stations around the coast.

Admittedly, the facsimile machine does cost £2,000 and is a bit of a power drain, but when you take the cost of a half-decent boat, between £10,000 and £20,000, spending £3,000 on accurate navigation and weather information hardly seems excessive.

The machine is produced by the Japanese company Furuno which, like Decca, produces a range of sophisticated satellite navigation systems which include screen displays of the boat's course.



A somewhat simplified version of the extensive computer operations which back up the Transit satellite system, which in turn provides the vital data (free) to the Walker 402, enabling small boats and yachts to get an accurate fix on their position anywhere in the world.

Position can be plotted to about 100 metres anywhere in the world with this Walker Z80-based navigation system.

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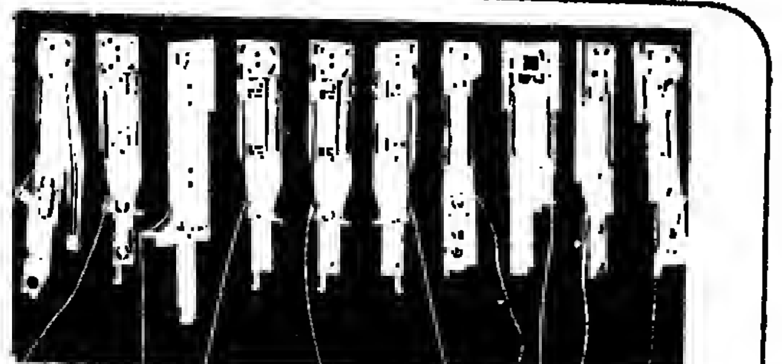

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Tender documents and specifications are available from:

THE COUNTY FIRE OFFICER
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DAVID WITTY
Chief Executive

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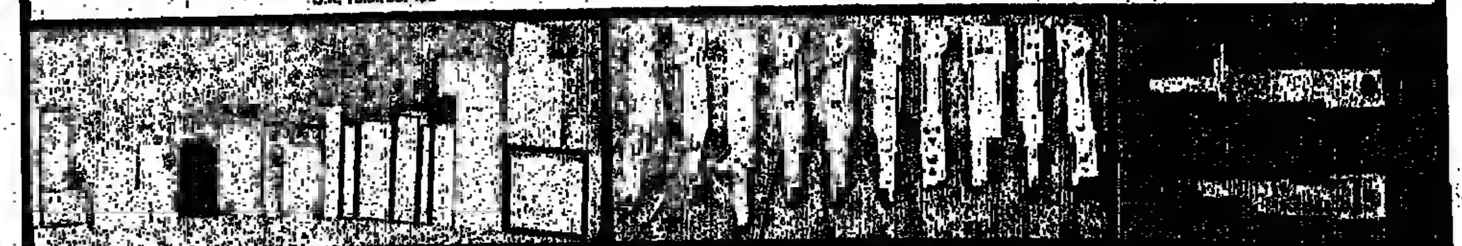

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R. GEN 2

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D. 5532

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D5735/5736

PROGRAMMER/ANALYST

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S5769

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M5649

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S.5724

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S.GEN

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E1/2801

IBM

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Candidates who are nationals of one of the NATO countries are invited to send full details of training, experience and personal data to the Personnel Officer, SHAPE Technical Centre, PO Box 174, 2501 CD The Hague, Netherlands, quoting reference MC/1/82, not later than three weeks after the appearance of this advertisement.

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MICRO ENGINEERS

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If you would like to join an organisation which has the product range and strength of technical support which the market place demands, then contact Kevin McCourt quoting reference no: 5682. Benefits include BUPA membership, company doctor, pension scheme, etc.

Lloyd Chapman Associates
123, New Bond Street, London W1Y 0HR 01-408 1670

WE'RE VIDECOM

We're in Hanley and we've made a name for ourselves around the world by designing and manufacturing a unique range of Computer and Terminal Systems for use in complex communications networks.

We're British. We're successful. We're growing fast and we need more good people to help us keep our edge.

WE NEED ELECTRONIC ENGINEERS

Senior Engineers with several years' experience of logic design with micro processors. People who can lead a team. We also need graduate Engineers to join these teams.

WE NEED PROGRAMMERS

Senior Programmers with experience in Real Time Micro Processor, Assembler Programming and less experienced people to work with them.

Salary is negotiable, we'll certainly pay you your worth and offer you a range of fringe benefits normally associated with an International company.

If you are right for one of these positions ring Hanley (04912) 78427, ask for Ralph Elmes. (8270)

CONTRACTS
IBM OS PL1 & IMS PROGRAMMERS
Also SOFTWARE DOCUMENTERS
Send résumés to:
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Bishop's Stortford
Hertfordshire CM23 3NR (8316)

PROJECT LEADER

c.£12,000 p.a.

Are you an ambitious project leader looking to develop your technical and managerial skills? Your opportunity may be with Rediffusion who need someone now to take charge of one of their largest computer projects.

You should have:
★ a minimum of 5 years' DP experience with at least 3 years on system design work
★ practical experience of terminal-driven accounting systems
★ some experience as a project leader

There is major emphasis by top management in the Company on new computer systems and a large 5-year development programme is underway. The new systems are terminal-driven using a recently installed mainframe and database. This is a permanent post in the Company's DP department at Aylesbury and you will report to the Systems Development Manager.

Act now and write or telephone me – Robin Aikman – in confidence, for an application form. Generous assistance will be given with removal expenses. Interviews will be in London.

Robin Aikman and Associates
8 Mornington Road London N8 8RL
telephone: 01-340 8635

JBA

Software Designers/Implementers

An opportunity to become a leader in Software Development Techniques

Home Counties to £16,000

If you would like to apply your knowledge to a wide range of Software Products then this is an opportunity to join a large multi-national organisation dedicated to the utilisation of the latest state-of-the-art technology.

In order to achieve this goal a specialist group has been formed and its major mission is to define the methods to be used in designing, implementing and controlling new software development and to specify new software tools to support those methods. Recent areas of involvement include application of structured design and programming techniques; finite state machine modelling; pseudo code; configuration management; project metrics and defect removal procedures.

There are three positions to fill within this group and candidates should have a strong software background, preferably with experience on real-time systems. Project Management skills would be an advantage since the jobs involve feasibility to implementation techniques and a great deal of contact with Senior Management and Programming Staff.

A salary and benefits package befitting this size of company is offered as well as frequent opportunities for overseas travel.

If you feel that you have skills to offer, you can find out more by contacting me at the address below.

Contact: Tony Staples

JAMES BAKER ASSOCIATES
International Personnel Consultants
32 Savile Row, London W1X 1AG. Tel: 01-439 9311.

Come in out of the cold

Why face another winter like this one, when you could be basking on the Mediterranean Coast earning an excellent salary with tax advantages and plenty of opportunity to save. Oasis Oil Company of Libya are looking for computer professionals to join them in Tripoli.

SENIOR SYSTEMS ANALYSTS

£16,500-£20,000 **Tripoli Based**

To apply you should have a minimum of 5 years experience in computer systems analysis and programming (commercial applications), a sound practical knowledge of ANS/COBOL and familiarity with CICS/VS, VSAM and EOS/VS power operating systems. A University degree is essential.

The system you'll be working on is made up of an IBM 370/135, 512K core, disk and tape peripherals and 3270 series terminals. The major programming languages are ANS/COBOL and MARK.IV.

Job Ref. No. SSA 16

SENIOR MAINTENANCE SPECIALISTS–Computers

£15,200 Min **Tripoli Based**

Here, we're looking for someone to perform maintenance and repairs including major overhauls; and to apply you should have had 15 years experience and hold the relevant technical qualification.

Job Ref. No. SMS 17

OASIS BENEFITS PACKAGE

- Furnished married/single housing provided for Tripoli based personnel.
- Vacation: 30 days annual leave with paid air fares to point of origin + 7 days interim leave after 6 months service with paid air fares to Europe + per diem allowance.
- Free medical attention and B.U.P.A. cover.
- Attractive provident fund plan.
- Low cost accident insurance plan.
- School facilities and children's education assistance for Tripoli based families.

APPLICATION HOTLINE

01·935 2019 or 01·935 6826

PLEASE QUOTE JOB REF. NO.

If you'd like an application form our Telephone Secretaries are waiting to hear from you on the Hotline. **This is a 24 hour, 7 day-a-week service**, but we regret that further details of vacancies or working conditions in Libya cannot be supplied on these numbers.

If it is not convenient for you to use the Hotline, please write to the Personnel Department at the address below for your form.

OASIS OIL COMPANY OF LIBYA, INC.,

Job Ref. No. . . . / 15th Floor, 33 Cavendish Square, London W1M 9HF

D.P MANAGERS AND PROJECT LEADERS SOUTH AFRICA R25000+CAR.

Break out. Spread your wings. Too many people are caged into jobs that don't offer sufficient rewards, don't offer much future, and aren't even all that challenging. Caged in because they don't have the courage to fly.

Tiger Oats and National Milling Company Ltd. in South Africa need people who aren't afraid to fly. People who want to go far in their careers.

The challenge

Tiger needs 6 senior people to install computers and computer systems at operating companies within the Group.

You will go into an operating company and establish its computer needs.

You will produce a User Requirement Specification and from that, a Systems Specification.

The software development will be done by Tiger's Corporate Office development team under your guidance.

You will implement the system and train the users to use it.

The operating company will, in effect, become your client. You will be their contact in the Management Services Department at Corporate Office.

The Rewards

Your salary will range from R21 000 to R25000 plus company car.

Full relocation to South Africa will be paid.

One month's free accommodation in Johannesburg while you settle in.

Assistance in raising finance if you wish to buy a house. All the security that a large company offers.

Tiger will consider bringing you out on a 2-year contract if you don't want to make a permanent move.

HOW FAR SHOULD YOU GO IF YOU WANT TO GO FAR?

The Opportunity

The Group has a long way to go in DP and the growth possibilities are tremendous.

You will be able to "do your thing," and many of your ideas will be put into practice.

You will work with very little supervision and will assume full responsibility for your project.

The DP team is small but has clout.

The Person

You will be at least 30 years old.

You must have designed computer systems. Ideally, you will have small machines experience.

You must be able to communicate at management level.

You must be totally self-motivated.

You must be prepared to travel occasionally.

The Hardware

The majority of the 51 computers are ICL System 10s, 2903s and 2903s are installed.

The Company

One of South Africa's top ten industrial groups.

Quoted on the London and South African stock exchanges.

Annual turnover in the region of R1 500 million.

Approximately 20000 employees.

Policy of decentralised computer processing within the Group.

Development is done centrally for the Group.

The Country

South Africa's growth rate was 6% while the rest of the world was in recession.

The purchasing power of the rand is much the same as that of the pound.

PRESCOT COMPUTERS LTD.

11-13 Broad Court, Covent Garden, London WC2B 5QN. Telephone 01-836 8885/6. In association with CPI. of South Africa. P.O. Box 5844, Johannesburg. **PCL**

"To create a corporate environment that is creative, stimulating and allows for opportunity and satisfaction in the performance of individual responsibilities."

The above statement is from Gould's strategy for the 80's. A company committed to growth. Overall, Gould's sales for 1980 topped £2.2 billion and are still increasing their emphasis on expansion.

Gould SEL Computer Systems Limited have, for the past ten years, been the world's leading manufacturers of 32-bit computers and today there's no minicomputer to equal their 32 series in power and compactness.

As in any growth company, more people are required to maintain existing workloads and to further strengthen the business for the future.

GOULD

Software Support Analysts – Salary neg + Co Car + Benefits

Field Service & Technical Support Engineers – Salary neg + Co car + Benefits
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A major European Computer Service Organisation with a 37% UK growth in 1981.

Our Client is a profitable, professional and fast growing leader in the computer services industry, with an envied reputation for the quality and scope of its computer service, software product range and professional staff.

A recently created Sales Division, recognised as the fastest growing sector of the company, was formed to capitalise on the rapid growth of the UK client base and business (approaching a turnover of £10M), providing the future management for planned branch offices and divisions.

The continued spectacular development of this division offers the opportunity to sell a range of products for vital management systems to both new and existing clients in well defined market areas.

This will prove most attractive to the above average sales executive, wishing to add marketing experience and team leadership to their success in sales.

Ideally, you will have a proven sales track record with a service bureau, major computer supplier or software house, and have a good understanding of the computer industry in general.

For further information and immediate confidential interview, contact Peter Dudgeon on 01 935 0671 (24 hour answering service) or 01 674 8627 (evenings and weekends).

SCR

London 01-935 0671 James House, 46 James Street, London W1
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA.
Brussels 010 322-640 7151/71 Avenue Louise 327, Boite 4, 1050 Bruxelles.
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for Del Monte Foods Ltd.

Up to £12,500

West London

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As a direct result of an internal promotion, we now require an additional Project Leader to manage one of the three teams developing all new systems on our IBM 4331.

Our need is for an experienced professional who can demonstrate a successful record of implementing major systems. You may currently be leading a project team — or you may be a senior member of a team who is ready to take on more responsibility. In either case, you should be a good communicator with the ability to work closely with users at a senior level. A knowledge of any TP monitor or interactive programming languages would be a great asset.

For more information, please telephone Barry Morgan, our Systems Manager on (01) 890 5181. Or if you prefer, send your c.v. to him at Del Monte Foods Ltd., Astronaut House, Hounslow Road, Feltham, Middx TW14 9AE.

Del Monte

Is there more to Kentucky?

Kah-ten-tah-teh was the Indian name from which the forked tongue created Kentucky. It means land of the future. A land well-known for its horses (Derby), bourbon, temperate climate and beautiful bluegrass countryside; a land where you could feel at home.

Why Kentucky?

Our clients, one of the largest regional insurance companies in the U.S.A., have their headquarters in Louisville, Kentucky. After a period of dramatic growth during the seventies they are setting out in new directions. New directions necessitating the development and expansion of their information systems facilities.

Their very large IBM multi-processor configuration is being extended to support a network of 1500 on-line terminals. Their objective is the development of an entirely new insurance system.

Why Computer People?

To achieve this objective, they have appointed Computer People to provide the project development team from the U.K. Over the past five years, hundreds of programmers and analysts have worked for us in the USA. While some have been required for their highly specialised technical knowledge, others have contributed their experience in specific applications.

All have enjoyed the variety and have benefitted from the experience. Our relocation package is fully comprehensive.

When?

Start dates for these 18-month assignments are staggered over the next three months, but initial interviews will commence almost immediately.

So if you have some of the skills required and want to obtain more details, what do you do?

$28,000 to $45,000

Applications Programmers and Analysts

with any of: **ASSEMBLER** (not necessarily IBM) or **COBOL, TSO, IMS,** or **CICS.** (**INSURANCE** experience preferred but not essential)

Systems Programmers

with any of: **OS** or **MVS, ASSEMBLER, COBOL, TSO, IMS, CICS, SMP4,** or **ACF 2.**

IMS or CICS Specialists

with any of: **OS/VS CICS** support, **OS/MVS, IMS/DL1,** or **DATA DICTIONARY.**

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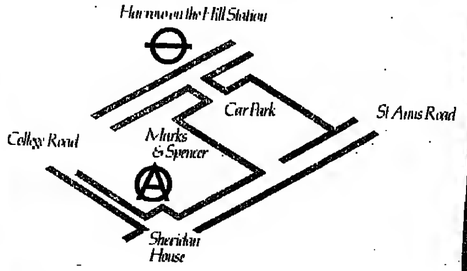
pay in both U.K. and U.S.A.
sickness payments
on-site welfare adviser

arranges:

medical insurance
personal loans
assistance with settling-in
accommodation
car transport
pleasant social
scene



On site open evening in Harrow for senior analyst/programmers and project leaders.

Following a successful open evening held at our offices at Sheridan House, 17 St. Anns Road, Harrow, Middlesex, in September, the Atlanco Overseas Company is providing a second opportunity to visit our premises and informally discuss the many opportunities that exist for experienced DP professionals.

Our ambitious projects are being developed for our parent company, the Arabian American Oil Company, (the world's largest oil producer) and incorporate large IBM state-of-the-art systems. The key senior analyst programmers and project leaders we are now seeking will be offered continued training but should have a minimum of 5 years IBM installation and application experience with a good knowledge of PL1. Experience of IMS or ADF would be highly desirable.

With starting salaries of up to £16,000 and a substantial relocation package, why not find out more about us and how we could influence your career development, by dropping into our Harrow office at the above address (all reasonable travelling expenses will be reimbursed) between 4.30 and 8.30 pm on Wednesday 3rd February when our EDP Manager and his staff will be there to answer your questions.

Alternatively, if you can't make that date but are keen to find out more either call Cole Westbrook on 01-861 1515 or write to Warren Girling at the above address.

This open evening is being arranged in conjunction with our recruitment consultancy Computer People International, 01-836 8411.

(8283)

SWITZERLAND

English speaking project Telex Software Development

An International Telecommunications Company is seeking Software Programmers to develop new Software for PUBLIC DATA SWITCHES SYSTEMS. Candidates should be in their mid to late 20s, have a degree, plus a minimum of 2/3 years' Assembler experience in a telecommunications environment. Alternatively candidates with operating systems experience would be equally valid. Successful candidates may look forward to enhancing their career progression, gaining valuable experience in an international environment.

German-speaking Project Software Development

A major communications company require additional German-speaking Programmers to develop a new Software communications system. Candidates should possess the following expertise:

- German language
- Assembler
- Process Control Type Applications
- Real-Time Communications
- 2/3 years' experience
- Degree

Qualifying applicants may look forward to considerable career advancement, gaining valuable expertise in an overseas environment.

DATAMATICS
RECRUITMENT SERVICES
01-399 9183
Datamatics Ltd, Freepost, Surbiton, Surrey KT6 5BR

JBA

Software Builders

To lay foundations for the future
Salaries £10,000 to £20,000

This international corporation is embarking on a major recruitment exercise to provide the means to take them through the technical challenge of the '80's and into the '90's. The people they are looking for will provide the methodology and the problem solving capability to put computing facilities at the fingertips of all employees worldwide.

If you have experience in some of the software areas shown here and are interested in developing your technical expertise then we would be interested to talk to you.
A range of jobs are available but all are involved in the provision of software tools to aid productivity and program development.

- **VM/CMS, MVS**
- **TSO/SPF**
- **IMS, VSAM**
- **PL/1, BAL**
- **COMPILERS**
- **GRAPHICS**
- **LASER PRINTING**
- **ARCHITECTURE**

Candidates should have reached a degree level of education although relevant experience will be considered.
If you can demonstrate qualities of initiative, flair and ambition this would be a definite advantage.
You will be based in THE NORTHERN HOME COUNTIES with opportunities for overseas travel and enjoy a salary and benefits package befitting this size of organisation.

If you find all this attractive and would like to know more contact Tony Staples

JAMES BAKER ASSOCIATES
International Personnel Consultants
32 Savile Row, London W1X 1AG. Tel: 01-439 9311.

(8282)

We're small enough...
to handle you Personally

Contact us for your career move. We have an excellent record in placing our candidates in the very best **Permanent** positions. Our close relationship and understanding with our clients' needs helps us to match these with your experience and ambitions.

To find out more about these positions or other possibilities for future Permanent and Contract work call us today.

PROGRAMMER
Surrey to
£10,500
+ Benefits
A minimum of 2 years IBM COBOL is necessary to join this totally new installation. The company utilise a new IBM 4341 with an SNA network serving 17 branch offices. Systems are on-line and an extensive database development is under way.
REF. MB.

SENIOR PROGRAMMER
with team leader responsibility to
£10,500 p.a. Rural, Essex
3 years + experience with IBM Assembler and/or PL1 knowledge of Technical Systems design or distributed process Systems desirable. Modern offices and first class benefits package.
REF. RP.

JUNIOR PROGRAMMERS
City **c£8000** + Subsidised Mortgage
Programmers required with a minimum of 18 months commercial experience of IBM ASSEMBLER or COBOL. Full re-training in CICS will be given to successful candidates. Installation comprises 2 x IBM 4341's under DOS/VSE and Power/VSE and making extensive use of CICS and BTAM.
REF. MB.

PL1 & ASSEMBLER PROGRAMMERS
Croydon to **£10,000** + Subsidised Mortgage
The company is part of a major Banking organisation. They require PL1 and Assembler Programmers of varied experience. The configuration comprises IBM 3031 and 4341, running under DOS/VS. DL1 and CMS are used extensively. The company will train ambitious candidates in ON-LINE and DATABASE techniques.
REF. MB.

Shuter Smith Associates

TYMSHARE UK

SALESMAN — COMMERCIAL SERVICES

LONDON BASED **£16K+CAR**

Tymshare UK is a Computer Services Company jointly owned by Tymshare Inc. of California ($280,000,000 turnover) and the Unilever group of companies. Other international affiliates are similarly established as joint holdings with major companies eg, Credit Lyonnais in France and the Marubeni Corporation in Japan.

The Company provides internationally networked, industry Specific, services which run on IBM, DEC and Xerox Mainframes and Micro/Mini/Intelligent terminals used as a turnkey or distributed processing capacity.

Due to rapid expansion, the Company is now seeking to recruit experienced and successful Salesmen to sell its services into the Commercial/Financial Sector. Experience may have been gained in either Mini Computer, Micro Computer, Software or Bureau Sales but a high level of energy and the ability to generate new business is essential.

A professional Qualification, degree of equivalent is preferred and it is unlikely that anyone over forty will be suitable for this position.

For further details phone: JOHN LOWRY ON 01-568 4277; or PETER JONES ON 01-278 7822

Lloyd Chapman Associates

(8288)

OGPC

SENIOR OPERATORS

QATAR — ARABIAN GULF

QATAR GENERAL PETROLEUM CORPORATION, The National Oil Company has vacancies for Senior Operators in its Information and Computer Centre. The Centre runs a Dual IBM 4331 with large data communication network.

Candidates must have a minimum 4 years' IBM experience with thorough knowledge of DOS/VS, Power/VS, CICS and Associated Utilities.

Knowledge of DOS/VSE, ICCF and communication network would be advantageous.

Preference would be given to candidates with second language, Arabic or French.

WE OFFER: COMPETITIVE SALARIES AND EXCELLENT FRINGE BENEFITS
NO LOCAL INCOME TAX.

All applications will be dealt within strict confidence. Interested applicants are invited to submit copies of their curriculum vitae to:

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SOME OF OUR CURRENT REQUIREMENTS.

IBM

IBM DOS CICS DL/1 COBOL — ANALYST/PROGRAMMER
IBM DOS COBOL CICS — PROGRAMMERS
IBM MVS PL1 DL1 — DATABASE DESIGNER
IBM MVS CICS PL1 (DL1 DESIRABLE) — CONSULTANT
IBM DOS COBOL — ANALYST/PROGRAMMER
IBM OS COBOL — ANALYST/PROGRAMMER
IBM DOS ADABAS/NATURAL — ANALYST/PROGRAMMER
IBM OS PL1 (OR COBOL) ADABAS/NATURAL — ANALYST/PROGRAMMER

OTHERS

PDP RST/E BASIC PLUS — ANALYST/PROGRAMMER
VAX VMS COBOL — ANALYST/PROGRAMMER
PDP 11 RSX-11M PASCAL (FEB) — PROGRAMMER
BURROUGHS B6800 MCP COBOL (MARCH) — PROGRAMMER
HONEYWELL LEVEL 6 SCREENWRITE COBOL — PROGRAMMER
HP 3000 MPE IMAGE VIEW COBOL — PROGRAMMERS
WANG VS COBOL (FEB START) — ANALYST/PROGRAMMER
ME29 COBOL — ANALYST/PROGRAMMER
ICL SY 10 ASS + OTHER COBOL — ANALYST/PROGRAMMER
U1100 EXEC COBOL TIP DMS — ANALYST/PROGRAMMER
MOTOROLA 68000 ASSEMBLER (ASAP) — SENIOR PROGRAMMER
ICL 2900 DME IDMS COBOL TPS (MARCH/APRIL) — PROGRAMMERS + ANALYST/PROGRAMMER

GERMANY

VAX OR PDP 11 (MARCH/APRIL) — SYSTEMS PROGRAMMER
BURROUGHS B2930 MCP COBOL (MAY) — PROGRAMMER
IBM DOS/VSE COBOL (MAY) — PROGRAMMER
ZILOG Z80 ASSEMBLER (IMM) (GERMAN ADVANTAGEOUS) — PROGRAMMER

SAUDI ARABIA

ICL 2900 IDMS COBOL (MARCH) — PROGRAMMERS
IBM IMS PL1 — ANALYST/PROGRAMMERS

A Computer Search contract starts by calling Tony Cotton or John Sharpe on Hemel Hempstead (0442) 40761 (24 hour answer service).

Computer Search (Contracts) Ltd.,
Hamilton House, Marlowes,
Hemel Hempstead, Herts. HP1 1BB.
(0442) 40761

Computer Search Contracts (8303)

SENIOR PROGRAMMER

HONEYWELL L64

MIDDX. c £9,000

Despite the recession, our Client, a household name, has enjoyed record results over the past two years. The data processing department has a vital role within this company and it has been decided to expand this by recruiting a Senior Programmer. The computer centre is situated in Middlesex and is easily accessible by road and public transport.

Applicants will ideally have a sound technical background to include around three years' COBOL programming within a Honeywell environment and should have a minimum of 6 months' systems exposure but more importantly should wish to push their analysis ability further. As well as the programming knowledge, candidates should also possess a good understanding of TDS on-line facilities and have a reasonable overview of telecomms.

In return our Client will offer an excellent starting salary and benefits package that includes a generous discount on company products. If you are aged 21-28 and wish to join a small but professional team that encourages rapid career progression contact Apex quoting reference CP 432.

Apex Apex Computer Recruitment Ltd
59 Grays Inn Road, London WC1
01-404 4821 24 hours.

Systems Analyst

Wembley

£9,000 to £9,500

The head office of this major engineering company is situated in Wembley, Middlesex. A leader in its field, both in the UK and overseas, achievements in engineering have led to recognition by Queens Awards to Industry for both Exports and Technical Innovation.

The company DP installation is IBM based with remote terminal links to other factory sites in the UK. Sophisticated on-line and database facilities are used and an additional Systems Analyst is required to complement the existing team.

Applicants should have at least 2 years systems experience gained preferably, but not essentially, in the manufacturing area. The ability to undertake both analysis and design is necessary, and a programming background would be useful.

Working on a wide variety of commercial, financial and manufacturing systems, you must be able to communicate effectively with both users and other company staff.

For further information please write or telephone (24 hour answering service) quoting ref: CW103-2P.

CAPP ASSOCIATES 01-686 9693
Capp House, 96d South End, Croydon CR0 3SD.
Computer and Professional Personnel Consultants (8274)

Your short cut to a long term, secure future

A phone call or a letter is all that's needed to put you in touch with Marconi Space and Defence Systems – the high technology company that has led the world for the past 20 years in underwater weapons research and development. So that today no company in the world can match either our experience or capability in all aspects of underwater technology.

Now, with the award of a major contract to develop Britain's new generation heavyweight torpedo, we are uniquely assured, as the UK's only contractor in torpedo design and development, of a long and exciting future – a future in which you can play a part.

We're now looking for the following specialists, men or women who can contribute to advanced project work in an exotic high powered R & D environment.

SYSTEMS ENGINEERING

Performance assessment – Trials analysis and definition – Simulation development – Algorithm development – Guidance systems – Operational analysis – Active and passive sonar – Signal processing – Microprocessor and minicomputer interfacing – Acoustic power sources – Analogue and digital systems.

Applicants must be highly innovative, totally up to date in state-of-the-art developments, with a degree in the natural sciences and extensive high level R & D experience.

SOFTWARE DESIGN

Microprocessor systems – Minicomputer systems – Simulators.

Applicants must be able to lead and motivate small teams of real time programmers working on a variety of software developments taken from original systems specifications. Acceptable qualifications include HNC/HND for intermediate level posts and a degree in Science or Computing for senior positions. Essential requirements are 1-5 years experience in real time programming with Coral 66 or Fortran. Experience of Assembler or Array Processor systems would be a distinct advantage.

COMPUTER OPERATION

Computing tasks are carried out on all aspects of weapons design, development and support in real time utilising 32 bit computers. Work is carried out on a shift basis and offers an unusually high degree of involvement and independence, calling for initiative and awareness.

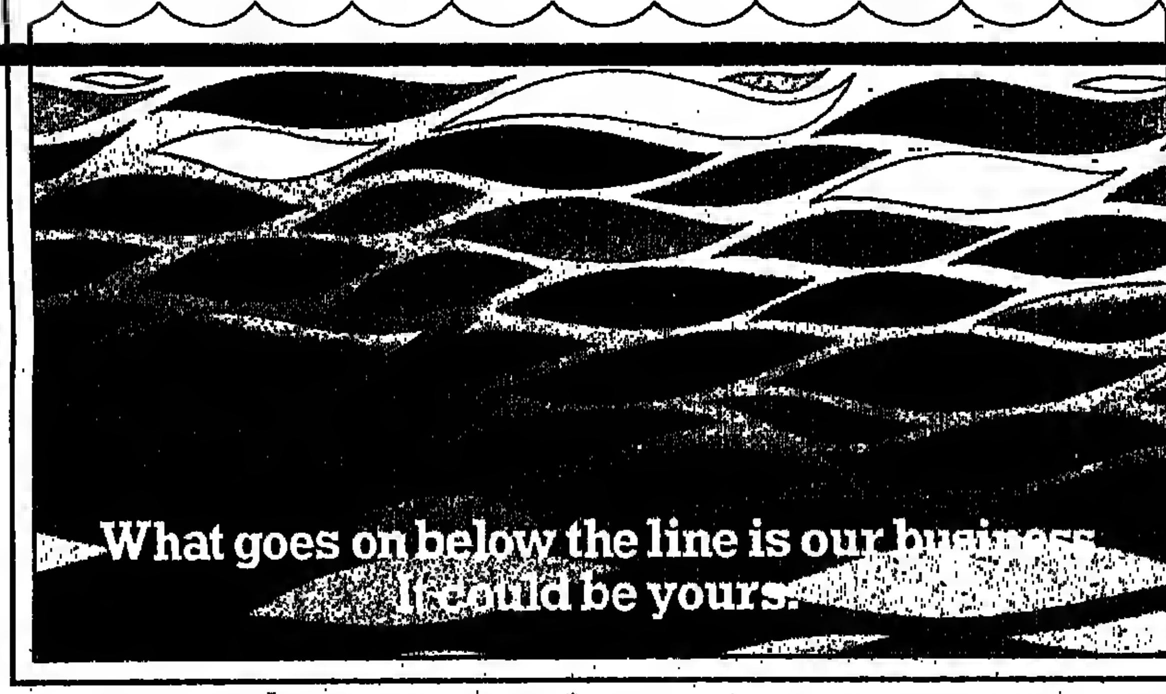
Applicants must be qualified to at least 'A' level and have had formal training, however, additional training will be given. At least 1 year's operator experience in a scientific or commercial environment is essential.

If your experience matches our requirements then get in touch. You'll find our salaries are good, our Company is in first class shape and our future assured.

Take up the challenge, phone or write to Ray Leggett for our application package *now*.

Marconi Space and Defence Systems, The Grove, Warren Lane, Stanmore, Middx., HA7 4LY. Tel: 01-954 2311.

Marconi Space & Defence Systems



EMJAY

COMPUTER SERVICES

SENIOR PROGRAMMER £12,000

Our client, based in Central London, needs your expertise if you have 4 years' IBM COBOL, have supervised staff and have a good working knowledge of CICS as some systems work will be involved. They have an IBM 4300 running DOS VSE and they are planning the installation of an 8100. This is a good opportunity for someone who wants to work in a small environment. Please call for more information.

PROGRAMMER £8,000+

Our client needs your expertise if you have a good grounding in either IBM COBOL or BASIC+ on PDP equipment. If you have one of these languages and would like the opportunity to be trained in the other language, then this is the job you are looking for. Training in CICS is also another advantage they offer. You will need a couple of years' commercial experience to take advantage of this opportunity.

RPG2 PROGRAMMERS £7,000+

Our clients based in Central London are looking for young dynamic RPG2 programmers to work in their IBM System 34 site. Most of the work you will be involved in is development, with minimal maintenance work. Promotion to analysis is readily available. If you have a minimum of 18 months' RPG2 not necessarily on IBM System 34, then this could be the career opportunity you are looking for. Call us to make an appointment.

FORTRAN PROGRAMMER £7,000+

Do you have 2 years' Fortran experience and an HNC or equivalent qualification. This bureau wants someone who is self motivated, tolerant and can work under pressure. They have DEC and micro computers, so this is an ideal opportunity for you to move into the expanding micro market. For more information call us NOW.

FOR THESE JOBS AND MANY MORE CALL ELLEN WALDREN OR LYNDA ABL ON 01-404 4339 or 01-242 0076 (8300)

EMJAY COMPUTER SERVICES Recruitment Consultants

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No longer just a millionaires' playground – It's now accessible to you

LONG-TERM CONTRACT

WITH POSSIBLE CONVERSION TO PERMANENT EMPLOYMENT

IF YOU HAVE ICL + IBM SYSTEMS EXPERIENCE (WITH EMPHASIS ON ICL) AND PREFERABLY A SYSTEMS BACKGROUND IN INSURANCE AND/OR FINANCIAL APPLICATION, WE NEED TO HEAR FROM YOU QUICKLY

Substantial benefits include:
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- Housing Allowance
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Our client will hold UK interviews during first week of February, so telephone now, in confidence DON KNAGGS on 0905-28469 (office) or at home, evenings/weekends, 0299-400077.

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London WC2A 3AA
Telephone 01-831 7252** (8324)

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Instron Limited, Coronation Road, High Wycombe, Bucks HP12 3SY. Telephone: High Wycombe (0494) 33333.

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To find out more, contact:
Peter McCue, Recruitment Manager, Motorola Limited, Semiconductor Products Division, Colvilles Road, East Kilbride, G75 0TG, Scotland. Tel: East Kilbride 39101.

(8301)

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Computer Science and Statistics Department

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Further details and forms available from The Secretary, Queen Mary College, Mile End Road, LONDON E1 4NS, to be returned by 26 February.

(8245)

THE UNIVERSITY OF LEEDS

SYSTEMS ANALYST AND COMPUTING ASSISTANT (PROGRAMMER)

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The Programmer post will be a permanent appointment, whilst the Systems Analyst will be appointed for a fixed term of three years.

Written applications from either sex, should be sent to the Registrar, The University of Leeds, Leeds LS1 9JT, quoting reference number 119/33/A2 by 11 February 1982.

(8111)

Hendon College of Further Education
REQUIRED FOR 1st MAY, 1982
Post No. 82/10

LECTURER 1

In Computing and Mathematics/Statistics

Application forms and further particulars may be obtained by sending a large stamped addressed envelope to The Principal, Hendon College of Further Education, The Boroughs, Hendon NW4 4BT. Closing date 12th February 1982. (8321)

OVERSEAS VIA I.A.

SOFTWARE/HARDWARE ENGINEER for the Production Planning Group of a multi national computer manufacturer. Work will entail hardware performance testing, hardware/software interfacing, evaluation and test. Experience of microprocessors essential, ideally with a knowledge of BASIC and PASCAL. Spoken German required.
Location: Vienna Ref. 13

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1. With experience of writing END USER Documentation for a new range of microprocessors and related software currently being developed. Knowledge of PASCAL and BASIC.
Location: Vienna Ref. 28
2. To write software **User Manuals** for a new micro processor based development and de-bugging system, from engineers performance specifications. Applicants preferably with a Degree or similar in a numerate subject, should show a knowledge of PASCAL, with BASIC or ASSEMBLER and a strong software background.
Location: The Netherlands Ref. 39

DATA ENTRY CLERK/KEYBOARD OPERATOR for Trainee Programmers required to edit/input translated screen and print out text etc. Knowledge of modern language(s) essential.
Location: Vienna Ref. 18

TECHNICAL AUTHORS/TRAINING OFFICERS with a background in Process Control and computer engineering to write the systems documentation for a new Analogue/Digital multi-function mini computer based process machine, and train users and service engineers on the equipment. A knowledge of hardware and software in such an environment, together with spoken German desirable.
Location: Germany Ref. 58

HARDWARE TECHNICAL AUTHORS required to write FIELD SUPPORT, MAINTENANCE and Programming manuals from engineers draft specifications. Applicants must display considerable experience of mini computer peripherals.
Location: Germany Ref. 88

SYSTEMS PROGRAMMER with 3 to 4 years experience to join an existing team. Responsibility will be held for implementation, maintenance and tuning of all operating systems and software. Hardware is an IBM 4341 running under DOS/VSE. Applicants will have experience of VM CMS, CICS, with a knowledge of Assembler and Fortran.
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Location: The Netherlands Ref. 86

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CSA

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LOCATION: North of London.

ACTION: Please write with full details. These will be forwarded direct to our client. List separately any companies to whom your application should not be sent. Ref. FY.1020.

This appointment is open to men and women.

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Please write with brief career details to: Robin Churchill, Technical Recruitment Manager, Plessey Marine Research Unit, Wilkinthroop House, Templecombe, Somerset. Or ring him on Templecombe (0963) 70551 ext. 458. Please quote reference TEM/202.

PLESSEY electronic systems

Royal Military College of Science, Shrivenham

Lecturer/Senior Lecturer Computing Science

The College is a residential establishment, running first degree and post-graduate CNAA courses, Army Staff courses and specialist courses, for both civilian and military students. It has an academic staff of over 100, whose duties are similar to those of University Lecturers. There are comprehensive laboratory, computing, workshop and library facilities, and staff are given every opportunity to become involved in research and development work, and extend their external contacts.

The Computing Science Branch is responsible for developing and researching into the application of computers to information systems, econometric modelling, operational research and financial modelling. DEC VAX-11/80, Perkin-Elmar 3200 and PDP 11/55 machines are maintained and operated plus several microprocessors. Programming languages in use are CORAL 66, ADA, BCPL, ALGOL, FORTRAN and BASIC. The successful candidate will be expected to undertake teaching and project supervision in various aspects of computing science, including data bases, operating systems and programming languages, at undergraduate, graduate and specialist levels; prepare and supervise practical work in support of teaching, and systems software in support of research, on the College's main frame and mini-computers.

Candidates must have a first or second class honours degree or equivalent in computing science or a related discipline. Experience at the latest level, particularly with any of the machines or programming languages used by the College, will be advantageous.

Appointment will be as Senior Lecturer (£8205 – £10320) or Lecturer (£5175 – £6960) according to qualifications and experience. Starting salary may be above the minimum at each level. Promotion prospects to £13000 and above. Accommodation may be available for single staff.

For further details and an application form (to be returned by 26 February, 1982) write to Civil Service Commission, Alencon Link, Basingstoke, Hants RG21 1JB, or telephone Basingstoke (0256) 68551 (answering service operates outside office hours).

Please quote ref: S(D)908.

(8276)

COISTE GAIRMOIDEACHAIS CHONTAE DHUN NA nGALL
COUNTY DONEGAL VOCATIONAL EDUCATION COMMITTEE
DONOGH O'MALLEY REGIONAL TECHNICAL COLLEGE
LETTERKENNY, CO. DONEGAL, IRELAND

LECTURER I IN COMPUTING

Salary Scale: IR£9,878 to IR£13,923 (under review)

The above Committee invites applications from suitably qualified candidates for the above post which may arise in the Regional Technical College, Letterkenny.

Qualifications are in accordance with the regulations of the Department of Education. Experience of the applications of computers to business systems will be an advantage. The College has two computers: PDP 11/34 and a PDP 8A, and a number of micro computers. The candidate appointed will be lecturing to students studying for the National Certificate in Computing — a two-year course certified by the National Council for Educational Awards.

Computing studies is an expanding area within the College and the successful candidate would be involved in the planning of future developments.

Application forms with full particulars are available from the Principal of the College, Port Road, Letterkenny, Co. Donegal, Ireland. (Tel. 074-21111) with whom completed forms must be lodged *not later than Friday, 19th February, 1982.*

Vocational Education Committee Offices, 2 Port Road, Letterkenny.

Sean O'Longain, Chief Executive Officer

SYSTEMS PROGRAMMER/OPERATIONS MANAGER

with at least 3 years RSTS/E experience to wet nurse our new PDP11/44 installation.

Experience in typesetting, text processing or word processing fields would be a distinct advantage.

Salary is negotiable and commensurate to the position offered.

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The Quadrant
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T. Endersby (Wakefield 367111 Ext. 3515) will answer queries.

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Application forms and further details from Directorate of Planning, Engineering and Transportation, Room 238, County Hall, Wakefield to be returned by 12 February, 1982. Please quote ref E6 76002.

(8257)

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If you'd like to talk to someone capable of discussing the technicalities then you should ring Michael Moliver or alternatively you can write to, or ring the Personnel Department for an initial meeting where we can discuss the longer term possibilities.

Personnel Department,
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Tel: 01-353 9451

BUPA

(8175)

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For further information telephone Jenny Dalrymple-Hay or Ian Murray West on 01-493 2947 (day), or respectively Beaconsfield (04946) 4579, Milton Keynes (0908) 563415 (evenings/weekends) or write quoting Ref. 9891.

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(8309)

UNIVERSITY OF LONDON
MANAGEMENT SYSTEMS DIVISION

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Two Experienced Programmers

Are required to join the Management Systems Division which provides a University wide administrative computing service based on two ICL 2956 computers running under DME2 and George 2S. Applications are intrinsically commercial but are wider than in many DP Departments.
The vacancies will be filled initially on a two year fixed contract basis and ideally applicants will have 2-3 years' experience of ICL COBOL in a on line environment.
Salary, according to age and experience, in a range to £9,000 per annum. Further particulars and application forms available from Personnel Department, University of London, Senate House, Malet Street, London WC1E 7HU or telephone 01-636 8000 (Ext. 15). Closing date for applications is 19 February 1982.

(8314)

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As well as a minimum of two years' computerised order processing experience, evidence will be required of successful staff supervision. Previous involvement with the specification of general office procedures will be an added advantage.

Please apply in confidence with full career, salary and personal details to:

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Tuscam Trading Estate
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(8267)

OUNDLE SCHOOL
PETERBOROUGH
PE4 8EN
Department of
Microelectronics

Director of Software

From September 1982 or earlier a vacancy will exist in this Department with particular responsibility for Software. The post is being created as a result of the expansion programme in this area at the School.
The post will involve teaching in the Department, and keeping abreast of developments in the field throughout education. The successful candidate will be expected to show flair and commitment to a team effort in keeping the School at the forefront of the technology.
Applications, including the names of two referees, should be sent to the Headmaster, Oundle School, Peterborough, PE4 8EN, by February 15th.

(8266)

BOX NUMBERS

Box number replies should be addressed to:

Box Number........................

c/o Computer Weekly
Quadrant House
The Quadrant
Sutton, Surrey SM2 5AS

HERTFORDSHIRE COUNTY COUNCIL

FINANCE DEPARTMENT

Systems Analyst

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During 1982 the implementation of an exciting new development strategy will commence to introduce personal computing, office automation and communications networks into the user departments.

Applicants should have a sound Data Processing background with one-two years' experience of analysis work preferably with a knowledge of TP and data-bases. Experience of the evaluation and installation of software packages would be an advantage.

Generous holidays, ideal working conditions in an attractive rural setting overlooking the county town of Hertford, a range of sporting activities and within easy reach of London's many amenities. Assistance with housing may be possible; removal, disturbance and lodging allowance are payable in approved circumstances.

Please apply for application form to The County Treasurer, County Hall, Hertford, quoting reference Cp 312. Application forms to be returned by 10 February, 1982.

(8265)

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Slough

£8,000-£10,000

We are recruiting for a manufacturing company with markets throughout the world. Based in Slough they are one of the leaders in their sphere and are backed by a major International Group.

The company's DP is run on a large IBM mainframe and on on-line mini-computers. They are now entering a significant phase of further development and therefore offer a number of interesting opportunities for:

Senior Analyst/Programmers and Analyst/Programmers

Present developments are centred on **IMS DB/DC** programmed in **COBOL**. The successful applicant will offer COBOL experience (2 years' or more) in an IBM environment and a knowledge of data-base techniques will be of particular interest.

These positions offer the opportunity to become involved in all aspects of system definition, design, development and implementation in a data base environment. The company offers excellent conditions of employment and A1 career prospects.

To learn more contact Myriad in Reading on the number below and we shall be pleased to discuss these positions in detail

Myriad Appointments Limited

30 Fleet Street, London EC4Y 1AA Telephone: 01-353 0981 24 hours
50a London Street, Reading, Berkshire RG1 4SQ Telephone: Reading (0734) 585802 24 hours

REF: R2/2801

myriad

MVS Senior Systems Programmer

The DP Department has recently installed a 12 megabyte **Amdahl V7B** with double accelerator to handle their expected workload increase over the next two years.

Wang equipment is used to provide word processing facilities and the Company is considering more extensive use of mini computers to support the powerful mainframe.

MVS/SP1.1

The machine is currently running MVS/SP1.1 at a high maintenance level and the Department is planning to install **VM/SP** in the middle of 1982.

APL will be introduced under **TSO** early in the New Year to provide a PERSONAL COMPUTING service for their users.

Other software includes **CICS/VS, IMS, TSO, SPF** and **LIBRARIAN** and the SYSTEMS PROGRAMMER will be responsible for evaluating possible additional software packages as well as tuning the existing system.

120 on-line terminals going to 200+

The users are heavily dependent on real-time systems and they are keen to increase the number of terminals to well over two hundred during the next 2-3 years. On-line processing has played an important part in our Client's success and the DP Department is continually seeking ways in which to improve the overall service.

Circa £13,000

The basic salary is further supplemented by an ANNUAL BONUS, free restaurant, free life assurance and a free private health scheme.

This senior position will cover all aspects of systems programming with a specific responsibility for the MVS software. VM experience would be an asset but is not a requirement.

The City

Our Client is one of the UK's largest insurance and financial organisations dealing in more than 150 different currencies. The modern offices are situated in the heart of London and should prove no problem for people travelling in from London and the Home Counties.

Please apply to our London office for further information quoting, **Reference S3/2801.**

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NORSK DATA IS EXPANDING R & D

Norsk Data is the international computer manufacturer from Norway. We are expanding our software R & D in the U.K. Our operations are based in Newbury, Berkshire. The working environment is attractive. So is the surrounding countryside.

COMPILER DEVELOPERS — to £14,000

We are building a commercially competitive compiler for ADA on our ND-500 family of computers. At the top end these are the most powerful VS 32-bit minis on the market. If you are strongly self-motivated, enjoy working in small teams, and you think your experience is relevant, we would like to hear from you.

Contact: Andy Pepperdine on 0635 31465

SOFTWARE SUPPORT — package to £13,000

Norsk Data requires additional professional staff to work in the software support department. Successful applicants will have the following experience:

1) education to degree level
2) 3 years' relevant experience in the computer industry
3) detailed knowledge of one or more 32-bit minis or supermini including operating systems
4) will have worked in a customer support role for a manufacturer or a systems house

Candidates must have a proven track record. They should be highly motivated and ambitious. (Previous applicants should not re-apply).

Contact: Geoff Butcher on 0635 31465

TECHNICAL SALES — Earnings package £18k includes car

The successful applicant will probably have a scientific or engineering degree; a minimum one year's sales experience of high value systems, over £200K; and a market knowledge of the engineering industry.

Contact: John Lewis on 0635 31465

REMUNERATION

These jobs are well rewarded. The benefits include 4 weeks annual holiday, BUPA membership, accident insurance, contributory pension scheme, good canteen, and group bonus scheme.

There is a share option scheme which applies to success in sales posts.

Norsk Data Limited
Nord House
Pelican Lane
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RG13 1NU

Norsk Data

COMPUTER PROFESSIONALS

Midlands £6,500–£8,500

The Company

Specialising in the development and support of sophisticated software products within the areas of retail and wholesale banking, financial systems and library circulation systems, Geac Computers Limited has enjoyed considerable success and a prodigious growth rate over the past 5 years. They are the U.K. subsidiary of a large Canadian manufacturer supplying high-technology equipment to 'blue-chip' organisations.

The Candidates

Vacancies now exist at three levels, as indicated by the salary range, for four additional analyst programmers to join an established project team working on the client site. The minimum skill being sought is at least 12 months' programming in an on-line financial environment preceded by a formal education. Client contact is an integral part of the work and the successful applicant must have initiative together with the personality and confidence to represent the company in a professional and business-like manner. A mature and flexible approach is of prime importance.

The Rewards

- A challenging and stimulating environment
- Excellent opportunities for Career Advancement
- A competitive compensation package.

REF ID/170

Geac

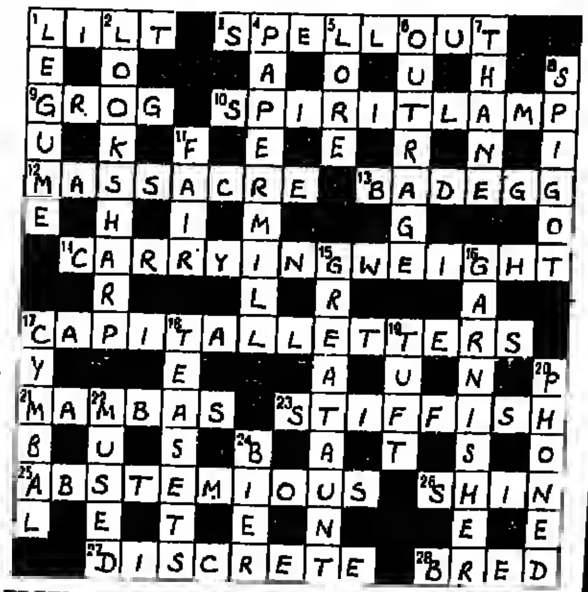
CP COMPUTER PROFESSIONALS
4 Kendrick Mews
London SW7
01 584 8790

For further information write to Computer Professionals quoting the advertisement reference number; alternatively phone Isobel Bruce on 01-584 8790.
Interviews will be held in London and Birmingham.

Computer Professionals look after the professionals.

CROSSWORD

Solution to Prize Crossword No 24



FREELANCE consultant Geoff Marsh of Congleton, Cheshire, wins £10 in our January competition. Rodney Parker, chief programmer with Barclays Bank International in Poole, Dorset, and John Hill, a sales manager with NCR's head office in London, win £5 each.

UNIVERSITY OF ZAMBIA

Applications are invited for the post of

SYSTEMS ANALYST IN THE COMPUTER CENTRE

Candidates must hold an M.Sc. in Computer Science or have a first degree and extensive experience in Systems Analysis and Design. The appointee will be responsible for carrying out feasibility studies and designing and implementing and maintaining computer-based systems. The University is currently replacing the 32K ICL 1905 computer system with a 96K ICL 2904 system with a fixed and exchangeable disc unit, three exchangeable disc units, two magnetic tape units, four direct data entry stations, a modular terminal processor with eight video display terminals, a card reader and a lineprinter. Salary scale: K6,372-7,905 p.a. [£1 sterling = K1.87]. Two- to four-year contract; biennial overseas leave; gratuity; family passages; baggage allowance. Detailed applications (two copies), including a curriculum vitae and naming three referees, should be sent to the University Secretary, University of Zambia, PO Box 31338, Lusaka, Zambia, to arrive no later than 1 March, 1982. Further particulars are available from the same address.

(8276)

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Technical Support Manager

Ref: IC/141 £11,190-£12,432 incl.

To supervise a small team responsible for providing expert advice and guidance to members of the Computer Services Unit and User Departments, as well as developing and maintaining the software environment.

Reporting to the Operations Manager, this is a key position in a go-ahead expanding installation which utilises many of the latest techniques. The installation is currently based upon ICL 2966 and 2956 machines providing computer services to most Departments within the Council. Software currently used includes VME2900 Operating System, DME, IDMS, DDS, TPMS and numerous software packages.

We are looking for a mature person of the highest calibre who can demonstrate proven experience of most of the aforementioned software in an ICL 2900 environment.

Principal Technical Support Officer

Ref: IC/43 £10,443-£11,496 incl.

Technical Support Officer

Ref: IC/144 £9,105-£10,433 incl.

To participate in the background technical support necessary to the smooth running of the Council's computer service.

Applicants for the PTSO position should have at least three years' system support experience in an ICL VME environment. Some knowledge of IDMS and/or TPMS would be desirable.

Applicants for the TSO position should have at least 18 months' system/operations support experience in an ICL VME environment. Some knowledge of databases and transaction processing would be an advantage.

Network Controller

Ref: IC/142 £9,105-£10,443 incl.

An experienced Data Communications person, preferably with an ICL 2900 VME background, is required to play an important role in the maintenance and development of the Council's Communications Network. Duties will include day to day technical responsibility for the efficient running of the network and liaison with Users, British Telecom and the suppliers of communications equipment.

Applicants should have at least two years' experience of Network Control in an ICL 2900 installation.

Application form from and to be returned to: The Department Staffing Officer, Room 207, Town Hall, Euston Road, London NW1 2RU or telephone 01-837 9988 quoting appropriate reference number. Closing date: 12th February 1982.

(8326)

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Applicants are considered on the basis of their suitability for the post, regardless of sex, race, marital status or disablement.

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ANALYST/PROGRAMMER	MARK IV	London	3 months
PROGRAMMERS & SNR PROGS	PL/1 DOS & OS	London area	6 months+
TP PLANNING MANAGER	IBM	London	6 months
PROGRAMMER	TANDEM	London	3-6 months
ANALYST/PROG. & PROGS.	2900 VME/B	London	6 months

Listed above are some jobs for which we urgently need more applicants

We will pay TOP MARKET RATES for these positions. Contact:

KEITH DUNCAN 9 a.m.-10 p.m.
0892 44757 (daytime) or 0892 65545 (eves.)
JAMES DUNCAN ASSOCIATES
7-9 Lonsdale House. Lonsdale Gardens
Tunbridge Wells, Kent TN1 1NV

(8337)

C'EST SI BON!

Systime France S.A. is a major subsidiary of Systime Ltd., and is fast developing in the French computer market with the full Systime range of hardware, software, service and support. To further develop our client service we are now seeking:

FIELD SERVICE ENGINEERS PARIS

Whilst based at our Paris H.O. in Rue Diderot you will be required to travel extensively throughout France. You will need to be an experienced engineer with a minimum of four years on either mainframe or mini computer systems coupled with a knowledge of DEC hardware and CDC peripherals. Familiarity with the French language is essential. This is an exciting and challenging opportunity to make a name for yourself in a rapidly expanding company and could lead to outstanding career opportunities within our French company.

We offer a high basic salary, commission, company car and a wide range of fringe benefits including assistance with relocation.

Initial product training will take place at our Group H.Q. in Leeds and interviews will be held in major U.K. centres.

Interested? write or phone Steve Williams, Personnel Department, Systime Ltd., Concourse Computer Centre, 432 Dewsbury Road, Leeds LS11 7DF. Telephone Leeds (0532) 702211.

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Carrying the flag for Britain's Computer Industry

SALES BIT

What salesm[en] can learn do[wn] on the farm!

A FEW weeks ago I had a conversation with a client who, to highlight his understanding of the fundamental role and responsibilities of the salesman, used the farmer as a direct analogy. Living as I do in a farming community, I was very taken with what he had to say, and having subsequently enlarged upon the topic, I present the parallel for your consideration.

It is a rather sweeping statement to say that there are two kinds of farmers, good and bad, but one tends to notice there are farmers who are clearly prosperous, well managed and efficient, using up-to-date and well cared-for equipment, and those at the other extreme who are disorganised, with ramshackle farms and equipment left rusting in the fields, and who barely manage to scrape a living.

In this case, let us forget the incompetents and failures and concentrate on the good farmer.

In most cases the farmer has a lot of fertile ground which can be relied upon, giving the right climatic conditions, to be fruitful provided he tends it with care. This is where most of his endeavour is concentrated.

He may also have less fertile land that will only grow a limited range of produce or is maybe only fit for grazing. He realises that no matter how much investment of time and money he makes, potential yield will always be minimal. He therefore gives it a much smaller proportion of his time.

In some cases he may have completely new land, either newly purchased or reclaimed, that apparently has significant potential; but tomorrow, not today. He therefore works it and fertilises it whenever he has the opportunity.

Or perhaps he puts some time aside for a "crash programme" of land enrichment with a firm timescale in his mind of how he is going to treat it, what he is going to grow on it and when he intends to commence his first planting.

In most instances he will also have some scrubland — a small patch or even acres of barren land which he accepts as worthless and seldom visits except for the occasional shooting trip.

In other words he has a total picture of his land, equipment and livestock and knows where best to invest his time.

Every day he spends some of his working day walking or driving around his land, just to see how everything is getting along. He knows he can't leave the farm to look after itself. There could be problems or even opportunities anywhere at any time.

A sick animal identified in good time may be saved by early treatment, ... neglect could ... costly process ... ment. On the other ... may wish to ... of new methods ... or fertilisation ... trying out.

As he wanders ... considers ways he ... can overcome the ... and exploit the ... ties he has identi[fied] ... the boundaries ... bility.

Making an early ... working until the ... day are complet[ely] ... logical sequence ... avoidable compo[nent of the] farmer's lot. The[y are] milked at the same ... day, morning and ... because that's what ... accustomed to ... viation will result ... ficantly reduced ... weather makes ... job impossible ... doesn't sit around ... he fixes his books ... some other job ... saving for a rainy ...

The good farmer ... his crops and does ... his land to become ... bearing the same ... and over. He main[tains] variety but ... in touch with the ... mands and econ[omic] ... tuations. He must ... knowledge and ... turn his back on ... and proven produ[cts] ... be, and grow ... profitable crops.

To switch from ... beef cattle is a ... in both practical ... mic terms; but if ... lation, market ... technological develo[pments] ... offer better opport[unities] ... they must be grasped ... a farmer has gone ... dation by firmly ... acknowledge the ... change.

Keeping accurate ... to-date details of ... ties is an essential ... nent of successful ... Which was planted ... What cost how ... is the current price ... ket trend? What ... seed did we plant ... What is the effect ... flow? What is the ... per acre?

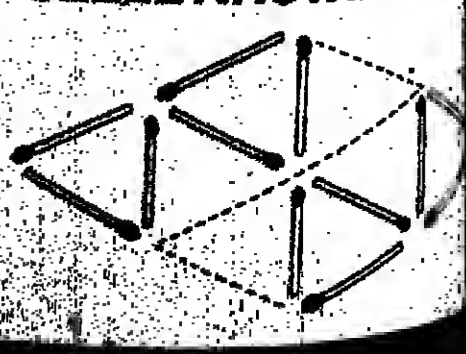
Without reli[able] ... knowledge of what ... be, what is and what ... before, his chances ... are extremely high.

In other words the ... is a good househol[der] ... constantly keeps ... the land, the seeds ... crops and the ... that he is sure of ... time to harvest. His ... not be done on ... without discipline ... a right time for ... To oppose the logic ... seasons is simply ... disaster.

Now that's not ... ferent from the selling ... is it?

Alan W...

PUZZLE ANSWER



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Now the TICKETMASTER system is coming to London and with it an exciting new position is created.

An OPERATIONS SUPERVISOR is needed to operate the system, control the communications network and demonstrate the system to new users.

The successful applicant will have 4 years operations experience, 2 of which will be in a PDP environment. Maturity, flair, ambition and good communication skills will characterise the appointed person.

This new appointment carries a salary which is excellent by any standards. Your salary and your career prospects will grow as TICKETMASTER grows.

To find out more ring Kay Stebbings at **CoOperators** on **01-836 8411** (reverse charges accepted).

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THE METRO GRAPEVINE

SYSTEMS PROGRAMMER SURREY TO £13K + benefits

You will be responsible for all systems programming. Ideal applicants should have a good knowledge of DOS VSE, with CICS. Experience of VM CMS will be an added advantage. The vacancy presents a unique opportunity to be a highly regarded professional within an expanding D.P. department. Promotion prospects are excellent. ref: 149p JK

PROGRAMMER SURREY TO £10K + benefits

Minimum requirements are at least two years' IBM COBOL with DOS VSE and DLI. Applicants with CICS and/or VM CMS experience can expect to join this D.P. department at a senior level. Your programming skills will be utilised to the full, and suitable applicants will not find themselves becoming bored. Mainly development work. ref: 149p JK

Our client, a large insurance house based in the City, are currently expanding their D.P. department and require computer professionals at various levels.

SENIOR ANALYST TO £13K

(Project Leader designate).
Current live experience of insurance systems essential, knowledge of reinsurance systems an advantage. Your skills should also include IBM COBOL, DOS, and CICS to command level.

ANALYST PROGRAMMER TO £10.5K

Analysis experience in an insurance environment an advantage, essential is experience of IBM COBOL, DOS, and CICS to command level.

ANALYST PROGRAMMER TO £9.5K

Experience as above but with a lesser emphasis on CICS experience. ref: 148p MM

SHIFT LEADER **WEST LONDON** £8K+
SENIOR OPERATOR £7K+
OPERATOR £6K+

Minimum requirements for this IBM site include a good knowledge of VS1 VM. Salary and conditions dependent on experience. A good operations person can expect rapid career progression. Currently a conventional three-shift system is operated. ref: 145p JK

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Our parent company, Cranfield Computer Services Ltd., leaders in the computer supplies industry, require sales consultants for London and the Home Counties. Vacancies have arisen due to continued expansion and internal promotions.

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